COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

Vol. 28] March, 1958 [No. 3

DISEASES CAUSED BY BACTERIA AND FUNGI

EDWARDS, S. J. & RIPPON, J. E. (1957). **The characters and distribution of certain staphylococci pathogenic for the bovine udder.**—*J. comp. Path.* **67,** 111-125. **647**

By phage typing methods, 381 of 395 strains of staphylococci, isolated from the milk of cows could be divided into 5 main types. These gave constant reactions to the coagulase test with both rabbit and sheep plasma. There was a relationship between the haemolysin titre and the toxicity for mice of the different phage types, but none between their toxicity and virulence for mice. Types 4 and 5 reacting with phage 52A and 78 respectively showed a high virulence for mice, were strong δ but weak α haemolysin producers, liquefied gelatin and tended to be associated with acute mastitis. All types were associated with clinical mastitis. The cows in 2 herds were infected with staphylococci of only one type. The types of staphylococci found in the milk were found regularly on the skin of the teat of infected and frequently of uninfected cows, on the hands of the milkers and on the liners of the milking machine.—A. ACKROYD.

COWAN, S. T. (1956). *Staphylococcus aureus* **versus** *Staphylococcus pyogenes.*—*Int. Bull. bact. Nom. Taxon.* **6,** 99-100. **648**

The species name *aureus* is considered inappropriate because the staphylococcus to which it is applied is so unstable that, even when freshly isolated, it throws a high proportion of *albus* variants. It is also stated that *Staphylococcus aureus* was correctly used by Rosenbach and *Staph. pyogenes* is a later synonym the use of which can be sanctioned only by the Judicial Commission whose "Opinion", it is considered, should be solicited.—T.E.G.R.

MUKHERJEE, A. & DAS, M. S. (1957). **Etiology of clinical forms of goat mastitis in West Bengal.**—*Indian vet. J.* **34,** 339-341. **649**

The authors recorded the relative percentage of the various organisms isolated on blood–agar from 90 samples of milk from goats affected with clinical mastitis. Staphylococci (mainly coagulase-negative *Staph. albus*) were present in 61·1% and streptococci (all *Str. agalactiae*) in 7·7%.—R. N. MOHAN.

NANI, S. & DEFRANCESCHI, L. (1957). Comportamento dei costituenti chimici del latte nella mastite bovina da "Streptococcus agalactiae". II. Le vitamine del complesso B. **[Chemical composition of milk in bovine mastitis due to** *Streptococcus agalactiae.* **II. Vitamin B complex.]**—*Arch. Vet. Ital.* **8,** 17-29. [English, French, German and Spanish summaries.] **650**

There was an increase in thiamine, in pantothenic, folic and nicotinic acids, and in vitamins B_6 and B_{12} during the clinical phase when the organism was present in the milk and the w.b.c. count exceeded 500,000/ml. The increase in pantothenic acid and thiamine persisted in long-standing cases. These results are ascribed to: breaking up of the complex vitamin into the different fractions; and, an increased blood supply in the affected quarter.—T.E.G.R.

PAUNOVIĆ, S. (1957). Maligni oblik ždrebećaka. **[A malignant form of strangles.]** — *Vet. Glasn.* **11,** 617-619. [In Croat. German summary.] **651**

Large abscesses found at rectal examination in four horses with a history of colic were diagnosed as an abdominal form of strangles.—E.G.

MURPHY, W. H., JR. & WATSON, D. W. (1957). **Susceptibility of inbred mice to group A streptococcal infection.** — *Proc. Soc. exp. Biol., N.Y.* **94,** 755-758. **652**

Of various unadapted strains of serotypes of Group A streptococci, one of *Str. pyogenes* Type 18 caused a fulminating infection in inbred mice. The reaction depended on the genetic constitution of the mice, and sex and age also influenced susceptibility. Swiss albino mice were

significantly more resistant. In the inbred C58 and BALB mice, latent streptococcal infection persisted for 3–4 months in those that survived the original inoculum. With this strain of *Str. pyogenes*, a spectrum of disease could be produced, using different strains of inbred mice. —A. ACKROYD.

RAMAKRISHNAN, M. & ANANTHAPADMANABHAN, K. (1957). **Studies on anthrax.**—*Indian vet. J.* **34,** 258-272. **653**

In tests with varying doses of the strains of *Bacillus anthracis* recovered from outbreaks in cattle, sheep and goats in Madras State, the cattle strain proved much more virulent than sheep and goat strains. Thus, the m.l.d. of the cattle strain was 7·5 million organisms for cattle, only 120 organisms for goats; that of the sheep strain was at least 10 million organisms for cattle, and below 1 million organisms for sheep and goats; and that of the goat strain was 0·4 million organisms for sheep and goats, but even 10 million organisms of this strain caused only a slight reaction in cattle.—R. N. MOHAN.

MAHLAU, E. (1957). Destruction des germes charbonneux contenus dans les eaux et les déchets de tannerie par un procédé de préparation de compost. **[Sterilization of *Bacillus anthracis* in tannery wastes by composting.]**—*Bull. Off. int. Epiz.* **47,** 85-94. **654**

The compost heap is made by mixing the partially dried waste with 15% quick-lime, 15% tobacco dust, 10% peat dust. It should be at least 3–4 metres high and 10–15 m. at the base and covered with a 10 cm. layer of peat dust. In the course of internal fermentation, which lasts 6 weeks, temperatures exceeding 65°C. are obtained even in the superior layers of the heap during a period of at least 3 days. After 6 weeks *B. anthracis* was not demonstrable in the heap either by cultural or by biological methods.—T.E.G.R.

KIELWEIN, G. (1957). Ein Vorschlag zur praktischen Differenzierung des Bacillus anthracis durch den Phagentest. **[Differentiation of *Bacillus anthracis* by bacteriophage.]**—*Tierärztl. Umsch.* **12,** 183-186. **655**

K. tested on 48 strains of *B. anthracis* and 122 strains of anthracoid organisms the specific activity of bacteriophage "W" described by McCloy [*V.B.* **22,** 2348]. He concluded that the phage test was simpler and more reliable than the "pearl beads" test [*V.B.* **24,** 1360]. —R.M.

THORNE, C. B. & BELTON, F. C. (1957). **An agar-diffusion method for titrating *Bacillus anthracis* immunizing antigen and its application to a study of antigen production.**—*J. gen. Microbiol.* **17,** 505-516. [Abst. from authors' summary.] **656**

An account of a sensitive and simple method for determining antigen concentrations in culture filtrates and for titrating antisera from animals and human beings immunized with the antigen. Distinct improvements in yields of antigen in a defined medium and a medium containing hydrolysed casein plus amino-acids have been obtained with the aid of this assay method.

SREDOVIĆ, S. (1957). Vrednost intravenozne tuberkulinizacije govedi kao ekspertizne probe. **[Inravenous tuberculin-testing of cattle.]** — *Vet. Glasn.* **11,** 465-469. [In Croat.] **657**

The value of i/v tuberculin testing in cattle with doubtful skin reactions was discussed. —E.G.

PATERSON, A. B. & HEBERT, C. N. (1957). **Tuberculin sensitivity in a second sample of attested herds.**—*Vet. Rec.* **69,** 389-394. **658**

Analysis of data obtained from tuberculin test results of 200 attested herds (14,552 animals) in Cumberland is presented and comparison of reactivity patterns with those of an earlier study of herds in Berkshire is made. Non-specific reactivity to mammalian tuberculin is similar in the two counties but its method of production differs. In Cumberland altitude and region have a decided effect on sensitivity but woodland wild life appears to have no influence. In other respects, *e.g.* incidence and level of reaction of animals with "skin TB.", a similar picture exists in the two counties.—J. E. T. JONES.

SINGH, G. & SEN GUPTA, B. R. (1957). **Tuberculous mastitis in India.**—*Indian vet. J.* **34,** 183-189. **659**

A brief review of the few records of the occurrence of tuberculous mastitis in India during the last 60 years.—R. N. MOHAN.

KÜHN, H. (1957). Die Anwendung der Haemagglutination nach Middlebrook und Dubos zur Diagnose der Eutertuberkulose. (Vorläufige Mitteilung.) **[The Middlebrook-Dubos haemagglutination test for the diagnosis of mammary TB. (Preliminary communication).]** — *Berl. Münch. tierärztl. Wschr.* **70,** 45-46. [English summary.] **660**

All except 5 of 148 quarter milk samples from cattle with TB. of the udder, one of 111 milk samples from tuberculin reactors in which bacteriological examination of the milk was negative, and none of 119 samples from attested

cattle were positive to the Middlebrook-Dubos haemagglutination test, using milk serum instead of blood serum. The tuberculin used was "GT Dessau" and a titre of 1:20 was regarded as positive. The test is recommended.—M.G.G.

GALLO, C. & GUERCIO, V. (1957). Sulla presenza del micobatterio tubercolare nelle carni di bovini affetti da tubercolosi cosiddetta localizzata—Nota II. [*Mycobacterium tuberculosis* **in the meat of cattle affected with localized TB. II.**]—*Atti Soc. ital. Sci. vet., Perugia*, 1956 **10,** 511-517. [English and French summaries.] **661**

The organism was demonstrated by g.pig inoculation in the muscles (diaphragm and supraspinatus) of 3 of 27 slaughter cattle. [For Part I, see *V.B.* **27,** 345.] In discussion on the paper it was pointed out that the terminology applied to the lesions is too general and does not convey an accurate enough picture of the developmental stage of the disease; specific standards for differentiation between localized and generalized TB. are necessary for the correct evaluation of carcasses at meat inspection.—T.E.G.R.

QUAGLIO, G. (1957). Studio istologico dei linfonodi regionali in vitelli trattati con vaccino antitubercolare Salvioli (V.D.S.). [**Histology of regional lymph nodes in calves following treatment with a killed TB. vaccine containing hyaluronidase described by Salvioli.**]—*Zooprofilassi* **12,** 449-468. [English and French summaries.] **662**

In 2 calves vaccinated with killed *Mycobact. tuberculosis* a nodule developed at the site of inoculation without any changes in the associated lymph nodes. In 3 calves vaccinated with killed organisms plus hyaluronidase the nodule was larger and the associated lymph node was involved. These effects are ascribed to increased diffusion of the killed mycobacteria due to hyaluronidase. The importance of the vaccine nodule and the lymphatic tissue in the elaboration of immunity and the analogy between the vaccine reaction and the primary lesion of natural infection are discussed.—T.E.G.R.

HALL, R. E. & WINKEL, F. (1957). **Avian tuberculosis in mink. A case report.** — *J. Amer. vet. med. Ass.* **131,** 49-51. **663**

TB. among mink caused by the avian type tubercle bacillus is recorded. Generalized enlargement of lymph nodes, and multiple small white foci in an enlarged spleen and liver were the typical gross lesions.—J. E. T. JONES.

JONES, O. (1957). **The problem of the tuberculous monkey. Some observations on the treatment of tuberculous monkeys.**—*Brit. vet. J.* **113,** 203-209. **664**

An account of the problems and management of an outbreak of TB. in monkeys at a zoo. Chemotherapy, tuberculin testing and vaccination are discussed.—J. E. T. JONES.

WEISS, D. W. & WELLS, A. Q. (1957). **Actively acquired tolerance to tuberculo-protein.** — *Nature, Lond.* **179,** 968-969. **665**

In connexion with a study of the role of delayed-type hypersensitivity to tuberculo-protein in immunity to TB., an attempt was made to eliminate tuberculin sensitivity in g.pigs by injecting foetuses *in utero* with Old Tuberculin and with live or heat-killed B.C.G. organisms. A significant, though limited, actively acquired tolerance was obtained.—J. E. T. JONES.

BARRY, V. C., BELTON, J. G., CONALTY, M. L., DENNENY, J. M., EDWARD, D. W., O'SULLIVAN, J. F., TWOMEY, D. & WINDER, F. (1957). **A new series of phenazines (rimino-compounds) with high anti-tuberculosis activity.**—*Nature, Lond.* **179,** 1013-1015. **666**

An account of the anti-tuberculous activity of a rimino compound, B663, based on experiments in mice and g.pigs. Some of the effects of B663 on mycobacterial respiration are discussed. —J. E. T. JONES.

SHEPARD, C. C. (1957). **Use of HeLa cells infected with tubercle bacilli for the study of anti-tuberculous drugs.**—*J. Bact.* **73,** 494-498. **667**

Two schedules were devised for studying the activity of anti-tuberculous drugs based on the observation that phagocytosis of tubercle bacilli in the system used (HeLa cells in monolayer) occurs mainly in the first day after addition of bacterial suspension to the tissue culture fluid. In the "early" schedule drug treatment was started before infection so that the drug was present during phagocytosis; in the "delayed" schedule the drug was administered on the second day after infection by which time phagocytosis was largely complete. The study showed that effective drugs were of two types:- (1) those with full activity against intracellular bacilli—cycloserine, iso-nicotinic acid hydrazide (isoniazid) and pyrazinamide. (ii) drugs with decreased activity against intracellular bacilli—*p*-aminosalicylic acid, streptomycin, tetracycline and viomycin. [See also *V.B.* **27,** 2297.] —J. E. T. JONES.

SMRČEK, Z. (1957). Prilog klinici i terapiji bakterijskog pijelonefritisa goveda. [**Clinical study and treatment of pyelonephritis in**

cattle.]—*Vet. Glasn.* **11,** 426-432. [In Croat. German summary.] **668**

Corynebact. renale was isolated from 27 of 33 cattle with pyelonephritis. The disease responded to treatment with penicillin, in doses of 1 million I.U. daily for up to 10 days. Sulphonamides either alone or with trypaflavine had no effect. The clin. picture is described.—E.G.

SUGIMURA, K., YABE, N. & SAKAKI, K. (1957). **[Studies on Traub's adsorbed swine-erysipelas vaccine.]**—*Bull. Nat. Inst. Anim. Hlth, Tokyo,* No. 32. pp. 7-26. [In Japanese. Abst. from English summary.] **669**

Traub's adsorbed vaccine was prepared from a strain of *Erysipelothrix rhusiopathiae* selected from 100 such strains isolated in Japan. The immunity produced by this vaccine in mice was very solid and similar to that from the Japanese live vaccine. The duration of immunity was 90 days. The potency of the vaccine was maintained at 0° to 5°C. for about 20 months.

KHALIMBEKOV, M. M. (1957). **[Epidemiological significance of carriers in listeriosis of sheep and goats.]**—*Veterinariya, Moscow* **34,** No. 6. pp. 17-20. [In Russian.] **670**

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from 4 of 317 sheep and goats by inoculation of nasal mucus into mice. The animals were on farms where listeriosis had occurred during the past 3 years. Of 1199 animals on these farms 67 were positive to the agglutination test at a dilution of 1:100, 35 at 1:200, and 16 at 1:400. The organism was isolated intermittently from the urine, milk, semen, and discharge from the nose, eyes and genital organs of 16 naturally and experimentally infected sheep and goats for about 13 days after the appearance of clin. symptoms. Ten recovered animals were placed in an isolated flock of 200 sheep and goats in August 1952. After 70 days a lamb fell ill, and altogether 12 animals developed the disease between August and October 1952. There were no further cases until the period June–October 1953, when 18 animals fell ill. There were a few sporadic cases in 1954. It is concluded that, although sick animals are the chief source of listeriosis, carriers also play an important role. —M.G.G.

ROSE, W. K. & RAC, R. (1957). **Encephalitis in cattle due to pasteurella.**—*Aust. vet. J.* **33,** 124. **671**

A group of 19 Jersey heifers were affected, of which 14 died and 5 recovered. A pasteurella (with the general characteristics of *Past. septica*) was isolated from the brain only, of 8 cases brought to P.M. examination. Lesions observed included meningitis, encephalitis and pneumonia (ascribed to drenching). Cows in close contact were not affected.—R. V. S. BAIN.

PETEK, M., CARLOTTO, F. & FRACASSO, B. (1957). Studio sperimentale di un vaccino embrionale contro il colera aviare. **[A chick embryo vaccine against fowl cholera.]**—*Atti Soc. ital. Sci. vet., Perugia,* 1956 **10,** 725-728. [English and German summaries.] **672**

A strain of *Past. septica* in the "S" fluorescent phase after the 3rd consecutive passage in the allantoic cavity of embryonated eggs was used; it was injected into the allantoic cavity of 10-day-old chick embryos. The vaccine was prepared from the dead embryos, the membranes and the fluids. It was used with satisfactory results on infected premises. Prophylactic vaccination was also carried out. Results at the time of writing, though not complete, were considered satisfactory.—T.E.G.R.

RAO, S. B. V. & THAKARAL, B. M. (1957). **Successful chemotherapy of avian pasteurellosis (fowl cholera) with sulphamezathine 16% sodium solution.** — *Indian vet. J.* **34,** 281-284. **673**

Sulphadimidine, administered at 0·2% level in drinking water for about 6 days, shortly after some deaths from acute fowl cholera, saved all except 2 of the 49 chicks treated, whereas all the 10 untreated chicks died. Similar treatment continued for only 3 days in a flock of pullets controlled the outbreak, but was suspected to result in some chronic infections leading to yolk peritonitis, and this was checked by a second course of treatment continued for about 6 days. —R. N. MOHAN.

RICHEY, D. J. & MORGAN, C. L. (1957). **The effect of chloromycetin and sulfaquinoxaline on fowl cholera in turkeys.**—*Poult. Sci.* **36,** 536-538. [Authors' summary modified.] **674**

Twelve-week-old turkeys were protected against a heavy infection of *Past. septica* by 1 g. chloromycetin per lb of food; 0·1 or 0·2 g. chloromycetin suspension i/m; 1·5 g. sulphaquinoxaline per 10 lb. of food; or 1·5 fluid oz. sulphaquinoxaline per gal. of water when treatment began at or before infection. When treatment started 18 hours after infection only chloromycetin suspension prevented death. Injection of chloromycetin 24 hours after infection saved 4 of the 6 birds. It appears that chloromycetin might control fowl cholera in turkeys if administered at the onset of the disease.

JOUBERT, L. & VALENTIN, F. (1957). La mammite chronique enzootique de la vache à *Pseudomonas aeruginosa*. À propos de l'entérite infantile à bacille pyocyanique. [**Endemic chronic mastitis in cattle due to *Pseudomonas aeruginosa*, and its importance in infantile enteritis.**]—*Rev. Méd. vét.* **108,** 145-157. **675**

Three outbreaks of *Ps. aeruginosa* infection are reported, affecting a total of 14 cows. In 2 herds the disease was chronic, lasting for about a year. Its course was symptomless, with intermittent acute crises, when the temp. rose to 39·5°–40°C., the udder became congested and painful, and the milk had a bluish tinge and a characteristic smell. Serological and allergic tests were unsatisfactory, except for an i/d test in the subcaudal fold which was specific and reliable. Treatment with antibiotics was ineffective; vaccine treatment and sulphonamides seemed more promising. The disease was reproduced in a healthy cow by instillation of a culture of the isolated organism into two quarters. Severe enteritis developed in 3 children who drank infected milk.—M.G.G.

RAGHAVACHARI, K. & REDDY, A. M. K. (1957). *Moraxella* (*Haemophilus*) *bovis* **isolated in bovine infectious kerato-conjunctivitis in Hyderabad (Deccan).**—*Indian vet. J.* **34,** 252-258. **676**

The authors investigated an outbreak of kerato-conjunctivitis in cattle, reproduced it in a healthy calf, and recovered from the latter an organism identified as *Haemophilus bovis*. The morphological, cultural and biochemical characters were described. The affection could not be reproduced by means of the culture in calves and other species.—R. N. MOHAN.

SETH, R. N. & CHANDRASEKARIAH, P. (1957). **Studies on infectious bovine kerato-conjunctivitis.**—*Indian vet. J.* **34,** 248-252. **677**

A detailed description of the morphological, cultural, biochemical and pathogenic characters of the organism isolated by Raghavachari & Reddy [see preceding abst.], which was identified as *Haemophilus bovis*.—R. N. MOHAN.

INNES, J. R. M., DONATI, E. J., ROSS, M. A., STOUFER, R. M., YEVICH, P. P., WILSON, C. E., FARBER, J. F., PANKEVICIUS, J. A. & DOWNING, T. O. (1957). **Establishment of a rat colony free from chronic murine pneumonia.**—*Cornell Vet.* **47,** 260-280. **678**

Chronic toxicity tests with chemicals can be very difficult to evaluate in rats with this disease. Yet few rat colonies are free from it. A colony was established from 11 Nelson breeding pairs and maintained for 7 months, which was free from enteric *Salmonella* infection, helminths, sarcosporidia, middle ear disease, myositis, myocarditis, and infection with pleuropneumonia-like organisms, *Bartonella* and *Haemophilus bronchisepticus*. The lungs of rats from this colony had none of the lesions found in chronic murine pneumonia, including lymphoid hyperplasia.—M.G.G.

LUCAS, H. & ZETTL, K. (1957). Behandlung der Coryza contagiosa der Hühner mittels Antibiotika-Injektionen. [**Treatment of contagious coryza of fowls by injections of antibiotics.**] — *Dtsch. tierärztl. Wschr.* **64,** 452-455. **679**

In experiments with various types of treatment in contagious fowl coryza the best results were obtained with single i/m injections of aqueous streptomycin, or of a similar dose of a commercial mixture containing per ml. half that amount of streptomycin, plus the unit-equivalent of penicillin, plus "Omnadin." Both these treatments were generally curative within 3–4 days and adult hens with old-established infection generally returned to their former laying performance within 8–10 days. There were few relapses. Injections of streptomycin in an oily medium provided much slower and inadequate absorption. The aqueous injections were also superior to treatment with aureomycin in the drinking water, or with aerosols of conifer oils.—G. P. MARSHALL.

REDAELLI, G. (1957). Osservazioni ezio-patogenetiche e cliniche sulla mastite colibacillare del bovino da latte. [*E. coli* **mastitis in dairy cows.**]—*Arch. Vet. Ital.* **8,** 197-220. [English, French, German and Spanish summaries.] **680**

In a study of 50 cases of *E. coli* mastitis in dairy cows the disease manifested itself in 2 clinical forms: a mild transient form affecting only the mammary gland with no appreciable macroscopic changes in the milk; a severe form, characterized by systemic disturbances (fever, diarrhoea, paraplegia), changes in the milk and permanent damage to the affected quarter. In the latter the causal organism showed different serological and biological characters correlated with the severity and extent of the lesions. Difficulty of treating severe forms with antibiotics in common use is ascribed to impossibility of early treatment (*i.e.*, before irreversible changes become established) rather than to drug resistance on the part of the causal organism.

—T.E.G.R.

BORGHI, A. (1957). Osservazioni pratiche sulla mastite da coli con paraplegia. [*E. coli* **mastitis with paraplegia in a cow.**]—*Vet. ital.* **8,** 713-715. **681**

An account of acute *E. coli* mastitis, with paraplegia, in a cow shortly after parturition. Recovery followed treatment with antibiotics, antihistamines, chloramphenicol and corticotrophine. The causal organism was inhibited, *in vitro,* by streptomycin and chloramphenicol but not by chlortetracycline.—T.E.G.R.

GEURDEN, L. M. G., DEVOS, A. & VAN DEN WYNGAERT, M. (1957). Voortgezette onderzoekingen omtrent pathologische coli's. [**Further studies of pathological strains of** *E. coli.*]—*Vlaam. diergeneesk. Tijdschr.* **26,** 97-105. [In Flemish. English, French and German summaries. For the previous part, see *V.B.* **27,** 1674.] **682**

Characteristics of 111 strains were summarized in tables which gave the species of animal, nature of illness, type of colony, and serological type. Type O_8 was isolated from a calf, 2 sows and 2 fowls; Type O_{25} from a sow with puerperal sepsis; Types O_{86} and $O_{26}B_6$ from 2 hens with granuloma; Type $O_{52}B_5$ from 2 pigs and 3 dogs. Provisionally the term 'pathological' was used to describe the strains, because their pathogenicity had not been studied.—R.M.

ZWEIFACH, B. W. & THOMAS, L. (1957). **The relationship between the vascular manifestations of shock produced by endotoxin, trauma, and hemorrhage. I. Certain similarities between the reactions in normal and endotoxin-tolerant rats.**—*J. exp. Med.* **106,** 385-401. **683**

ZWEIFACH, B. W., BENACERRAF, B. & THOMAS, L. (1957). **The relationship between the vascular manifestations of shock produced by endotoxin, trauma, and hemorrhage. II. The possible role of the reticulo-endothelial system in resistance to each type of shock.**—*Ibid.* 403-414. [Authors' summaries modified.] **684**

I. The vascular reactions to lethal doses of *E. coli* endotoxin, in the mesentery of the rat, resemble the reactions of traumatic and haemorrhagic shock in that a profound inhibition of arteriolar and precapillary reactivity to topically applied epinephrine occurs after an initial stage of hyper-reactivity; the small veins fail to relax completely after constrictor doses of epinephrine; and the terminal vessels become unusually sensitive to fluctuations in temperature of the fluid irrigating the tissue. Rats in which tolerance to bacterial endotoxin is induced, by repeated daily doses, become highly resistant to the lethal effects of both drum trauma and haemorrhagic shock. However, rats in which the adaptation to traumatic shock is produced by repeated exposure to drum trauma, do not develop a significant degree of tolerance to lethal doses of endotoxin. Injection of small non-lethal doses of bacterial endotoxin during non-lethal episodes of trauma or haemorrhage leads to the development of irreversible shock and death. The bearing of these findings on the problem of the relationship between endotoxin and traumatic shock is discussed.

II. In studies designed to establish the interrelationship between bacterial endotoxins and the vascular sequelae of haemorrhagic and traumatic shock, the effect of factors known to influence the phagocytic behaviour of the reticulo-endothelial system (r.e.s.) were investigated. Measures which induced a so called "blockade" of the r.e.s. were uniformly associated with an exacerbation of the vascular reactions to the endotoxin of *E. coli.* Such pretreatment also counteracted the cross-tolerance induced by endotoxins against the lethal effects of haemorrhage or drum trauma. The vascular reactions characteristic of irreversible haemorrhagic shock could be simulated by a combination of pretreatment with carbon or proferrin and the infusion of small doses of *E. coli* endotoxin. An increase in the phagocytic activity of the r.e.s. induced by repeated injections of certain colloids, was associated with an enhanced tolerance of shock. Measurement of carbon clearance values indicated that although an augmented phagocytic capacity was present in rats wtih induced tolerance to bacterial endotoxins, the development of resistance to trauma was not associated with a comparable change in the phagocytic function of the r.e.s.

SEKARIAH, P. C. & SETH, R. N. (1957). **Studies on *Klebsiella pneumoniae* infection in chicks.**—*Indian vet. J.* **34,** 315-320. **685**

The authors described in detail the serological and other characters of an organism isolated from the unabsorbed yolk of a chick that died 5 days after hatching. The organism was identified as *K. pneumoniae* Type III.

—R. N. MOHAN.

I. ZURECK, F. (1957). Über die im Landesveterinäruntersuchungsamt Berlin in den Jahren 1950-1956 gemachten Salmonellenfunde. [**Salmonellae isolated at the Veterinary Investigation Centre for Berlin Province, 1950-1956.**]—*Arch. Lebensmittelhyg.* **8,** 25-30. **686**

II. SEIDEL, G. (1957). Salmonellafunde im Veterinäruntersuchungs- und Tiergesundheitsamt Berlin in den Jahren 1950-56. [**Salmonellae isolated at the Veterinary Investigation Centre for Berlin City, 1950-56.**] — *Ibid.* 199-201. **687**

I. & II. The number of samples from each species of animal examined, and the number and species of salmonella found, are presented in tabular form.—R.M.

MÜLLER, J. (1956). Om salmonellainfektioner hos kvaeg. [**Salmonella infection in cattle in Denmark.**] — *Medlemsbl. danske Dyrlaegeforen.* **39,** 489-506. [In Danish.] **688**

In 8,016 dead calves examined bacteriologically in Copenhagen between July 1948 and April 1956, the incidence of salmonella infection was 2·17%; 1·79% being due to *S. dublin* and 0·26% to *S. typhi-murium*. Other types isolated were *S. enteritidis* (2 cases), *S. enteritidis* var. *danysz* (3), *S. bredeney* (2) and one each of *S. duesseldorf*, *S. saint-paul* and *S. chester*. The incidence of *S. dublin* tended to decrease and that of *S. typhi-murium* to increase. Of 1,093 samples of imported meat and blood meal and feeding and fertilizer bone meal examined in 1949-54, 4·5% yielded 49 strains of salmonella of 21 types; in the same period 7 strains of 6 types were obtained from 10 samples of imported bones: these strains are listed with their incidence. Apart from *S. typhi-murium*, about two-thirds of these types had not previously been isolated in Denmark and the remainder only sporadically. Infections by these (in Denmark) rarer types as well as by *S. typhi-murium* on two farms were traced to imported meat and bone meal and to imported bones used for bone meal manufacture, and the same types were isolated from dust from the factory that had supplied both farms; on one farm 7 types of salmonella were isolated from the faeces of 16 apparently healthy cows. During the 8 years salmonella infection was found in 16 herds, the incidence being spread over most months. In most cases no striking lesions were found in the organs. It would appear that *S. typhi-murium*, in calves, caused sporadic secondary infections in most cases, a possible source of most of these sporadic outbreaks being latently infected poultry. Cows found to be faecal excretors were purchased and kept for study at the Serum Laboratory. All were pregnant and all gave birth to healthy calves at term.—F.E.W.

SIEBURTH, J. McN. (1957). **The effect of furazolidone on the cultural and serological response of *Salmonella typhi-murium* infected chickens.** — *Avian Diseases* **1,** 180-194. [Author's summary modified.] **689**

Chickens maintained on wire mesh in isolation and orally inoculated with *S. typhi-murium* rapidly became infected in many tissue sites, most of which became culturally negative 30 days after inoculation.

Furazolidone at 0·005% in the feed appeared to hasten the elimination of *S. typhi-murium* while 0·01% apparently restricted the infection to the intestinal tract.

Both concentrations of furazolidone suppressed the formation of agglutinins but not the formation of indirect haemagglutinins to *S. typhi-murium* in orally infected chickens. A conc. of 0·01% reduced mortality and prevented the formation of agglutination reactors in day-old chicks orally inoculated with *S. typhi-murium*, but did not decrease the incidence of intestinal carriers.

AGRIMI, P. & GABRIELLI, G. (1957). Su alcuni casi di salmonellosi da S. bareilly in pulcini. [*Salmonelli bareilly* **infection in chicks.**] — *Zooprofilassi* **12,** 399-403. **690**

An account of 3 outbreaks of *S. bareilly* infection in chicks is given. About 1,300 birds aged 3–15 days were involved with a mortality of 15–25%. The organism was isolated from viscera, bone marrow and intestinal contents. Treatment consisted of sulphonamides and antibiotics, chloramphenicol and vitamin B supplement in a light, digestible diet. Chronic carriers excreting the organism in the faeces are considered to be the source of infection.—T.E.G.R.

GENTILE, A. (1957). Sulla brucellosi dei bufali. [**Brucellosis in buffaloes.**]—*Vet. ital.* **8,** 591-596. [English, French and German summaries.] **691**

Brucella abortus was demonstrated bacteriologically and biologically in aborted foetuses, in foetal membranes and blood samples of buffaloes in which abortion occurred at the 6–8th months of pregnancy.—T.E.G.R.

ALEANDRI, M. & GARGANI, G. (1957). Sulla diagnosi sierologica di brucellosi nei tori, ricerca degli anticorpi agglutinanti completi ed incompleti (Coombs Test), fissazione dell'antigene su carta (Metodo Castañeda) e fissazione del complemento. [**Serological diagnosis of brucellosis in bulls, research on complete and incomplete antibodies, fixation of the antigen on paper and complement fixation.**]—*Zooprofilassi* **12,** 391-397. **692**

Serum samples from 285 bulls were simultaneously subjected to the tube agglutination and

various other tests. Agglutinating titres up to 1:40 were obtained in a high percentage, using standard antigen prepared from Strain 99 W; these are not considered specific as all the other tests were negative. It is, therefore, maintained that diagnosis of brucellosis in bulls should not be based solely on agglutination up to 1:40 with standard antigen unless supported by clinical evidence and other serological and biological tests.—T.E.G.R.

MONDINI, S. (1957). Studio delle reazioni dubbie nella sieroagglutinazione per la *Brucella abortus* nei bovini. **[Doubtful reactions in the haemagglutination test for *Brucella abortus* in cattle.]**—*Atti Soc. ital. Sci. vet., Perugia*, 1956 **10,** 644-647. [English and French summaries.] **693**

Cattle sera giving doubtful or positive reactions with an antigen prepared by the author were subjected to ammonium sulphate (30% and 50%), heat at 70°C. for 10 min., agglutinin absorption and paper electrophoresis. With none of these methods was it possible to distinguish specific from non-specific agglutinins in the doubtful reactions. When standard antigen was used negative reactions were obtained with sera which had previously given doubtful reactions. —T.E.G.R.

SIRONI, A. (1957). Sulla dimostrazione delle brucelle nel latte vaccino con particolare riguardo all'esame colturale. **[Isolation of brucella from cows' milk with special reference to cultural methods.]**—*Vet. ital.* **8,** 676-684. [English, French and German summaries.] **694**

Milk samples from 578 serologically diagnosed cases were simultaneously subjected to biological tests in g. pigs and to cultural tests on a medium containing penicillin and on a medium containing actidione and bacitracin. The penicillin medium was unsatisfactory owing to exuberant growth of fungi. Better results, comparable with those of biological tests, were obtained with the other medium in which actidione inhibited fungi. In view of the sensitivity of some *Brucella* strains to bacitracin it is considered that a medium containing actidione, as fungus inhibitor, and gentian violet, as bacterial inhibitor, would be more suitable.—T.E.G.R.

HARNACH, R. (1957). Úloha hmyzu brucelosního isolátu v synanthropním ohrožení brucelosou. **[Role of arthropods in the transmission of brucellosis.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30,** 309-316. [In Czech. English, German and Russian summaries.] **695**

Brucella organisms were demonstrated in 11·1% of flies caught in a cowshed where there were abortions, and in 13% of those caught on the manure heap on the same farm. In about two thirds of all infected flies brucella was present on the body surface, in the remaining third in the digestive system. In experimentally infected flies brucella survived for up to 7 days, in mosquitoes for 48–72 hours, although brucella was never demonstrated in mosquitoes caught on the premises. Flies examined about 3 months after the last abortion had occurred were free from brucella.—E.G.

ŻÓRAWSKI, C. & GRUNDBOECK, J. (1957). **Studies on the determination of the degree of virulence of strains of *Br. abortus*.** — *Biul. Inst. Wet. Puławy* **1,** 49-52. [In English. Abst. from authors' summary.] **696**

The catalase value and the number of micro-organisms cultivated from 1 g. of spleen tissue from infected g.pigs are considerably higher when virulent strains are used than with strains of low virulence.

There was no direct relationship between the catalase value and the number of micro-organisms cultivated from 1 g. of spleen tissue, particularly with strains of low virulence.

The count of micro-organisms in the spleen two and six weeks after infection, the body weight, P.M. lesions and the level of agglutinins in the blood are more reliable indicators of the degree of virulence of a strain of brucella than the quantitative determination of catalase.

GADZHIEV, K. S. (1957). **[Allergic diagnosis of brucellosis in sheep.]** — *Veterinariya, Moscow* **34,** No. 8. p. 57. **697**

Of 308 sheep positive to the i/d test for brucellosis 208 reacted in 24 hours and 100 in 48 hours. Of 110 sheep which after 24 hours gave a doubtful reaction to the test, within 48 hours 30 became positive, 13 were still doubtful and 67 became negative. Of these 67 all were negative to the agglutination test except for 3 which were doubtful. It is considered that the allergic reaction should be read after 48 hours. —M.G.G.

SERDYUK, S. I. (1957). **[Comparison of vaccines against brucellosis in sheep.]**—*Veterinariya, Moscow* **34,** No. 8. pp. 25-30. [In Russian.] **698**

Immunization experiments with g.pigs and 39 pregnant ewes compared *Br. abortus* Strain 19 vaccine with a killed *Br. abortus* crystal

violet vaccine prepared at the Ukrainian Institute for Experimental Veterinary Science [see *V.B.* **26,** 3392–93]. In sheep both vaccines gave a satisfactorily high degree of immunity to conjunctival infection with 20,000 million organisms of *Br. melitensis* Strain 74. A method described as "single multiple application of vaccine at micro-intervals" provided the same resistance to infection as three ordinary [intramuscular?] inoculations: details are lacking.—R.M.

MASYUKOV, A. V. & GRACHEV, I. I. (1957). **[Systemic reactions in healthy sheep after inoculation of Strain 19 vaccine by various routes.]**—*Veterinariya, Moscow* **34,** No. 8. p. 56. **699**

Twenty sheep were inoculated with *Brucella abortus* Strain 19 vaccine by the s/c or i/d route, or *via* the scarified skin. Raised temperatures were observed, except in those vaccinated by skin scarification, which showed no general or local reactions. All animals became positive to the c.f test, and continued so for about 3 months. The highest agglutination titres were seen on the 15th day after inoculation, in all sheep except those vaccinated by skin scarification. Agglutination titres disappeared in 2 months. Reactions to the allergic test were confined mostly to the sheep vaccinated s/c.
—M.G.G.

MAESTRONE, G. (1957). Limiti al passaggio di *Br. abortus* nella cavia per via cutanea. **[Resistance of the skin of g.pigs to *Br. abortus*.]**—*Atti Soc. ital. Sci. vet., Perugia* 1956 **10,** 641-644. [English and German summaries.] **700**

The dose of *Brucella abortus* required to set up infection by scarification in the g.pig was 1,000 times that required by the subcutaneous route.—T.E.G.R.

BERGMANN, D. E., HALLECK, F. E., MECHALAS, B. J. & TENNEY, R. I. (1957). **Characteristics of a factor protecting the viability of lyophilized *Brucella abortus* cells.** — *J. Bact.* **74,** 101-105. [Authors' summary modified.] **701**

A factor increasing the survival of *Br. abortus* during freeze-drying was extracted from the supernatant of aged cultures, and from young and aged cells. It was purified to a waxy material by solvent extraction. Chemical and enzymic reactions and spectroscopic characteristics showed it to be a lecithin.

CORSALINI, T. (1957). Risultati conseguiti con la vitamina "K" in un focolaio naturale di brucellosi ovina e caprina con manifestazioni di aborto. **[Vitamin K in the treatment of brucellosis in sheep and goats.]**—*Atti Soc. ital. Sci. vet., Perugia,* 1956 **10,** 647-650. [English and French summaries.] **702**

Vitamin K had no therapeutic effect on *Brucella melitensis* infection in sheep and goats but the rate of abortion among treated pregnant animals was low.—T.E.G.R.

JAKŠIĆ, B. D. (1957) **[Brucellosis and spirochaetosis in hares.]**—*Vet. Glasn.* **11,** 423-425. [In Serbian. French summary.] **703**

Of a total of about 6,000 live hares and carcasses examined, purulent processes were seen in 789, in 274 of which the lesions were localized in the genital organs. Brucella was demonstrated in 9, spirochaetes in 54 hares. Spirochaetosis responded well to neosalvarsan (neoarsphenamine) and penicillin.—E.G.

FARINA, R. (1957). Epidemiologia delle infezioni da leptospira nei bovini in Italia. (Indagini sierologiche su 1820 animali). **[Epidemiology of bovine leptospirosis in Italy. (Serological survey).]** — *Vet. ital.* **8,** 567-590. [English, French and German summaries.] **704**

Serum samples from 1,820 cattle in different regions were subjected to the agglutination test. Of these 196 were positive at titres above 1:200 in the following order: *L. icterohaemorrhagiae,* 101; *L. sejroe–saxkoebing,* 53; *L. australis A* and *B,* 20; *L. ballum,* 7; *L. pomona,* 6; *L. grippo-typhosa,* 6; *L. canicola,* 2; and *L. hyos,* 1.—T.E.G.R.

KENZY, S. G. & GILLESPIE, R. W. H. (1957). **Failure of infected ducks to transmit *Leptospira pomona* to calves.**—*Vet. Med.* **52,** 310-311. **705**

Four calves whose drinking water was contaminated for 102 days by 7 ducks experimentally infected with *L. pomona* did not develop agglutination titres for the organism.
—M.G.G.

KIRSCHNER, L. & MAGUIRE, T. (1957). **Survival of leptospira outside their hosts.**—*N.Z. med. J.* **56,** 385-391. **706**

In New Zealand during 1951–57, of a total of 502 cases of human leptospirosis reported, 416 were in farm personnel and their families. In laboratory tests, leptospira was shown to survive in damp soil for up to 3 weeks, and in stagnant water for up to 2 months. The role as reservoirs of infection, of farms where conditions are wet and where human or animal carriers are present, was discussed.—E.G.

Tait, A. R. & Ryan, F. B. (1957). **Chlorpromazine in the treatment of tetanus in the horse.** — *Aust. vet. J.* **33,** 237-238. [Abst. from authors' summary.] **707**

Case histories of two horses which recovered from tetanus after repeated administration of chlorpromazine, are presented.

Mondini, S. & Prati, G. (1957). Sulla patogenesi del tetano sperimentale e spontaneo del cane. **[Pathogenesis of experimental and spontaneous tetanus in dogs.]**—*Zooprofilassi* **12,** 375-389. [English, French and Spanish summaries.] **708**

Generalized tetanus was reproduced in dogs by inoculation of toxin into the plantar cushion or i/v; unnerved muscles also developed tetanic contractions. When the toxin was injected i/m the condition set up was primarily localized. There was no increased excitability when the toxin was injected into the spinal cord. Injection of novocaine reduced tetanic spasms. Studies on natural cases of tetanus in a horse, a sheep and a donkey revealed that large quantities of toxin were elaborated at the portal of entry of the organism. Results obtained and literature on the subject are taken to indicate that in all species natural tetanus assumes a generalized form and the localized form is the result of experimental inoculation. The mode of action of the toxin is discussed. It is considered that production of toxin acting on the c.n.s. varies with different strains of *Cl. tetani*.—T.E.G.R.

Katić, V. R. (1957). Bakteriološka dijagnostika botulizmusa. **[Bacteriological diagnosis of botulism.]**—*Veterinaria, Sarajevo* **6,** 150-154. [In Croat. English summary.] **709**

Diagnosis of botulism by toxin–antitoxin neutralization was considered superior to the haemagglutination test, since types C and D of *Clostridium botulinum* do not produce haemagglutinins.—E.G.

Katić, R., Puhač, I. & Hrgović, N. (1957). Prilog poznavanju uticaja soka silaže na stabilnost toksina i razmnožavanje klica Cl. botulinum Cβ. **[Survival of *Clostridium botulinum* Cβ and stability of toxin in silage.]** —*Vet. Arhiv* **27,** 121-128. [In Croat. English and French summaries.] **710**

Virulence of *Cl. botulinum* Cβ toxin gradually decreased during 6–24 hours in sugar beet leaf, lucerne and maize stalk silage infusions, at a pH from 4·46–7·4 and was completely destroyed after 30–36 hours. *Cl. botulinum* grew, however, and produced toxin, at pH 6·72–7·32 in beet leaf and lucerne silage, and in maize silage at pH 6·91–6·92, but not at pH 5·26 and 5·5.—E.G.

Chevé, J., Gauthier, J., Guillo, B. & Parez, M. (1957). Méthodes et techniques de laboratoire applicables au diagnostic de la vibriose bovine. **[Methods applicable to the diagnosis of bovine vibriosis.]**—*Rec. Méd. vét.* **133,** 197-216. **711**

A critical review, with details of methods thought to be suitable for diagnosis.—R.M.

Melrose, D. R., Morgan, W. J. B., Stewart, D. L. & Thomson, D. M. (1957). **The treatment of *Vibrio fetus* infected bulls.** — *Vet. Rec.* **69,** 691-693. **712**

Twelve bulls infected with *V. fetus* were successfully treated with an infusion or a cream containing 2 g. of streptomycin and 1 million units of penicillin per 100 ml. The suspension was injected into the posterior third of the prepuce once daily for 3 days. The bulls were still free from infection 12 months later. It is recommended that treatment should be followed by periodic test-matings with clean heifers.

—M.G.G.

Birrell, J. (1957). **Infection by vibrio as a cause of disease in pigs.**—*Vet. Rec.* **69,** 947-950. **713**

The disease was observed among piglets in five herds and was characterized by bright yellow diarrhoea, coarseness of the hair, staggering gait, stunted growth and, a common feature, mild swelling of the eyelids (less marked than in bowel oedema). The severity of the disease varied with the age of the animal, from a serious illness with a high mortality in piglets to a carrier state with no clinical symptoms in adults. Recovered animals remained unthrifty. A vibrio was demonstrated in the colon of affected subjects. Control measures recommended are early weaning and artificial rearing, early treatment with streptomycin and elimination of infected breeding stock.—T.E.G.R.

Fox, M. S. & Hotchkiss, R. D. (1957). **Initiation of bacterial transformation.** — *Nature, Lond.* **179,** 1322-1325. [Authors' summary modified.] **714**

Evidence is presented in support of a model describing the initiation of bacterial transformation by deoxyribonucleic acid. The results suggest reversible binding of deoxyribonucleic acid to the bacterial cells. This is followed by slow, irreversible incorporation, which then yields

transformed cells. Increases in the number of adsorption sites per bacterium can be observed under conditions which suggest that the creation of such sites depends on a process of protein synthesis that can be carried out by the bacteria in the resting state.

VALENTINE, R. C. (1957). **The action of chemical disinfectants on bacteria in droplets compared with that in large volumes.**—*J. gen. Microbiol.* **17,** 474-479. [Author's summary copied *verbatim.*] **715**

Because of adsorption phenomena, copper sulphate solutions containing traces of protein are less toxic to bacteria in droplets than to similar bacteria in large volumes. With dilute phenol solutions the reverse was found. The quantitative results suggest that the non-flagellate organism studied moves with about 25 times the energy of brownian motion.

PRESTIDGE, L. S. & PARDEE, A. B. (1957). **Induction of bacterial lysis by penicillin.**—*J. Bact.* **74,** 48-59. [Authors' summary modified.] **716**

Escherichia coli growing exponentially in salts-glycerol medium was unable to form new colonies after 20–30 min. exposure to 150 μg. per ml. benzylpenicillin. 20 min. after the addition of penicillin the ribonucleic acid content of the bacteria decreased, and at 25 min. synthesis of protein, ribonucleic acid, deoxyribonucleic acid and enzymes ceased. Leakage of large molecules and other indications of permeability changes were seen at 10 min. Similar observations were made with *Bacillus megatherium.* Inhibitors of protein synthesis largely prevented this leakage in *E. coli;* inhibitors were more effective the earlier they were added. It is considered that penicillin induces the formation of an enzyme which attacks the bacterial cell membrane and cell lysis ensues. Extracts of *E. coli* treated with penicillin caused the lysis of protoplasts made from *B. megatherium;* similar fractions of untreated *E. coli* or of bacteria exposed to penicillin in the presence of 5-methyl-tryptophan were ineffective. The mechanism of the action of penicillin is discussed.

REDAELLI, G. (1957). Ricerche sulle mastiti micotiche. I. Riproduzione sperimentale della mastite criptococcica. II. Controllo sperimentale dell'azione patogena di alcuni blastomiceti sporigeni e asporigeni (*Saccharomyces, Hansenula, Pichia, Torulopsis* e *Candida*) per la mammella degli animali da latte. [**Mycotic mastitis. I. Experimental** *Cryptococcus neoformans* **mastitis. II. Pathogenicity of** *Saccharomyces, Hansenula, Pichia, Torulopsis* **and** *Candida.*]—*Arch. Vet. Ital.* **8,** 39-65 & 97-120. [English, French, German and Spanish summaries.] **717**

I. Mastitis was artificially induced in goats and cows by intramammary injection of strains of *Cryptococcus neoformans* isolated from cases of mastitis in human beings and cows. The period of incubation was 7–16 days, according to the dose. The ensuing changes in the milk and the mammary lesions are described. Negative results were obtained with a strain which was non-pathogenic for lab. animals.

II. Intramammary injection of *Candida, Torulopsis, Saccharomyces, Pichia* or *Hansenula* isolated from cases of bovine mastitis caused an inflammatory reaction different from natural infection. *Candida pelliculosa, C. tropicalis* and *S. fragilis* set up a transient mastitis in which the fungus persisted in the milk for long periods; the typical changes in the milk associated with natural infection were observed in only one case of experimental *S. fragilis* infection. The other strains did not persist in the milk, nor did they cause clinical, bacteriological or histological changes. In some cases penicillin, administered before, during or after experimental infection with *C. tropicalis,* increased the growth rate and pathogenicity of the fungus.—T.E.G.R.

EDWARDS, P. Q. (1957). **Histoplasmin testing in different geographic areas.**—*Lancet* **273,** 707-712. [Author's summary modified.] **718**

Histoplasmin testing is a most useful epidemiological tool for defining the geographic distribution and prevalence of infection with histoplasma; but it is important to distinguish between specific reactions caused by infection with *H. capsulatum* and non-specific reactions resulting from sensitisation by some other organism. For histoplasmin testing, as for tuberculin testing, results obtained with a standardised product and presented as percentage frequency-distributions of the measured sizes of the reactions provide a way to make that distinction. Supporting evidence may be obtained from study of the frequency of pulmonary calcifications. The traditional 5 mm. criterion for a positive (specific) reaction gives misleading results in some areas, where many of the reactions measuring 5 mm. or more are interpreted as representing infection by some other organism than histoplasma and coccidioides.

ROBERTS, D. S. (1957). **An ecological study of the mycotic dermatitis organism.**—*Aust. vet. J.* **33,** 233-236. **719**

A comparative study of filamentous and coccoid forms of two strains of *Actinomyces*

dermatonomus revealed that filamentous growth occurred on solid media without serum only under reduced oxygen tension, while a free supply of oxygen and a relatively low temperature promoted coccoid formation. Cocci did not self replicate but formed filaments. Heat resistance of both forms was enhanced by preliminary drying. Cocci were more resistant to $CuSO_4$ and $ZnSO_4$ than filaments, and the capsular material of the cocci was thought to bind the copper. Chloramphenicol, oxytetracycline and tetracycline inhibited the filamentous growth while streptomycin inhibited one strain and penicillin was ineffective. *Escherichia coli, Aerobacter aerogenes, Pseudomonas pyocyanea* and two bacilli and a coccus isolated from sheep's wool completely inhibited growth in broth. A coagulase negative *Micrococcus* sp. was relatively inhibitory. The relationship of these *in vitro* findings to the pathogenesis of mycotic dermatitis is discussed, and it is concluded that filamentous growth occurs in the lesion and cocci are formed in the exudate.—J. H. Thomas.

Johnston, D. G. & Lynch, H. P. (1957). **Combination stain for acid-fast bacilli and fungi.** — *Lab. Invest.* **6,** 187-190. [Abst. from authors' summary.] **720**

An account of a staining method combining the use of Kinyoun's carbol fuchsin and the Gridley fungus stain, for simultaneous examination of a fixed-tissue specimen for acid-fast bacilli and fungi.

Fahey, J. E. (1957). **Infectious sinusitis of turkeys caused by antibiotic resistant pleuropneumonia-like organisms.** — *Vet. Med.* **52,** 305-307 & 309. **721**

Treatment with streptomycin sulphate had no effect on sinusitis in a flock of 380 turkey poults. Simultaneous injection of 50 mg. of chlortetracycline and 50 mg. of oxytetracycline into the sinus was partially effective, curing 119 out of 143 birds. The organism grew *in vitro* in a concentration of 200 μg./ml. of streptomycin, or 5 μg./ml. of chlortetracycline or 0·5 μg./ml. of oxytetracycline.—M.G.G.

Hofstad, M. S. (1957). **Egg transmission of infectious sinusitis of turkeys.**—*Avian Diseases* **1,** 165-170. [Author's summary modified.] **722**

Evidence is presented that infectious sinusitis of turkeys is transmitted through the egg. Culled poults and eggs which failed to hatch were obtained from one hatchery which was experiencing outbreaks of sinusitis in 3-week-old poults. These were examined for air-sac lesions and cultured for pleuropneumonia-like organisms. Twelve isolations were made from poults removed from the shell, it was not possible to isolate the organism from live, culled poults. In another experiment, fresh, fertile eggs were obtained from an infected flock. The eggs were incubated and hatched in isolation. The organism was isolated from dead embryos and poults dead in the shell, but with one exception, no isolations were made from live poults even though they had air-sac lesions. Poults from these eggs reared in batteries suffered an outbreak of sinusitis between 2 and 3 weeks of age. This indicated that the infection may be transmitted to poults by way of the egg.

Cordy, D. R. & Adler, H. E. (1957). **The pathogenesis of the encephalitis in turkey poults produced by a neurotropic pleuropneumonia-like organism.**—*Avian Diseases* **1,** 235-245. [Authors' summary copied *verbatim*.] **723**

The development of an encephalitis in turkeys produced by a highly neurotropic PPLO is described. The disease is characterized by vasculitis and focal necrosis.

Gross, W. B. (1956). ***Escherichia coli* as a complicating factor in chronic respiratory disease of chickens and infectious sinusitis of turkeys.**—*Poult. Sci.* **35,** 765-771. **724**

The lesions associated with naturally occurring "air-sac disease" were reproduced in chickens and turkeys by injection of *E. coli* into the air-sacs; the pathogenicity of this organism was increased by simultaneous injection of the causal agent of chronic respiratory disease. Pericarditis was produced by all of 5 serological types of *E. coli* isolated from field cases of pericarditis, and by exposure of infected birds to *E. coli* in aerosol. Infection (manifested by any combination of fever, bacteraemia, serological titre of 1:64, pericarditis or death) was also produced by i/v injection, a much higher dose being necessary. Chloramphenicol, neomycin, oxytetracycline, streptomycin and chlortetracycline were effective against the organism *in vitro*.—T.E.G.R.

Hoflund, S., Andersson, P., Broberg, G., Hässler, L. & Nielsen, N. (1957). Produceras antibiotika av den aktiva våmfloran? **[Does the active ruminal flora produce antibiotics?]**—*Nord. VetMed.* **9,** 257-273. [In Swedish. English and German summaries. Abst. from English summary.] **725**

The authors demonstrated the presence of

antibiotic activity against *Sarcina lutea* and *Lactobacillus bulgaricus* in rumen contents from healthy cows. Bacteria obtained in pure culutres from normal rumen contents (*Ps. aeruginosa, B. subtilis* and an unidentified organism) possessed antibiotic properties, while rumen contents in which bacteria had been killed by potassium chlorate or "coliformin" did not. Antibiotic activity was absent from rumen contents of cows with digestive disturbances caused by feeding spoiled food or by other factors, and this probably enabled putrefactive bacteria to develop at the expense of other rumen flora. Inoculations of *E. coli* and *Cl. welchii* into a normal rumen caused no change in the flora. —R.M.

See also abst. **957** (report, Gt. Britain).

DISEASES CAUSED BY PROTOZOAN PARASITES

DIKMANS, G., MANTHEI, C. A. & FRANK, A. H. (1957). **Demonstration of *Trypanosoma theileri* in the stomach of an aborted bovine fetus.**—*Cornell Vet.* **47,** 344-353. **726**

An actively motile organism identified as *T. theileri* was found in the stomach contents of a bovine foetus aborted during the 8th month of gestation.—D. POYNTER.

EAST AFRICA HIGH COMMISSION. (1956). **East African Trypanosomiasis Research Organization, Annual Report 1955-56.** [FORD, J.] pp. 49. Nairobi: Zenith Printing Works. Shs. 7/50. **727**

In East Africa, research on trypanosomes is, in general, far behind that on tsetse flies. For some years it has been possible to identify any East African tsetse fly with reasonable certainty. This is not so with trypanosomes, present diagnostic methods in cattle trypanosomiasis being by no means precise. New strains of *T. congolense* have been supplied by the organization for laboratory study at Kebete. This work may yield information of value for the more precise diagnosis of the main trypanosome disease in East African cattle. "The elimination or control of tsetse flies and the use of prophylactic drugs are both methods of preventing the appearance of trypanosomiasis in cattle. Once infected the animal must be cured". "The accurate use of curative drugs depends upon the complete diagnosis of the disease, a matter of increasing importance in present times when a variety of drugs are available, some effective with one strain of trypanosome and not with another."

It was shown that *Glossina morsitans* and *G. swynnertoni* normally feed on wart-hogs, seldom if ever on zebra and hartebeest, and very rarely on impala. *G. morsitans* if given the opportunity will take most of its feeds from hippopotamus. *G. austeni* likes feeding on bush-pig. *G. palpalis* fed mainly on reptiles, *G. brevipalpis* mainly on hippopotamus. Nine samples of ingested blood from *G. longipennis* all originated from rhinoceros. In *G. pallidipes* 43 of 52 identified blood samples were from bushbuck and none from buffalo, although available. [See also *V.B.* **27,** 1129].

The laboratory experiment on immunity in cattle after exposure to trypanosome infection while protected by antrycide continued for a year [see *V.B.* **26,** 1582]. After the cessation of antrycide protection there was no immunity to inoculation of *T. congolense*. All unprotected control animals died from the disease in about 120 days after inoculation.

During this experiment regular blood chemistry examinations were made. These provide normal values over all seasons for serum calcium, phosphorus, total proteins and gammaglobulins. No seasonal fluctuations were found.

The field experiment at Kiboko in which cattle were exposed to natural infection while being protected by antrycide, which was also a follow-up of the original observations of acquired immunity under antrycide protection [*V.B.* **25,** 2337] yielded similar results to those of the laboratory experiment, no appreciable immunity being demonstrable in any of the cattle. The Kenya Veterinary Dept. co-operated in this experiment.

There is close co-operation between the E.A.T.R.O. and the Medical, Veterinary and Tsetse Control Departments of East African Territories and the Belgian Congo.

—J. A. GRIFFITHS.

ASHCROFT, M. T. (1957). **The polymorphism of *Trypanosoma brucei* and *T. rhodesiense*, its relation to relapses and remissions of infections in white rats, and the effect of cortisone.** —*Ann. trop. Med. Parasit.* **51,** 301-312. **728**

White rats were infected with 3 strains of *T. brucei* and 5 of *T. rhodesiense*, and the course of the infections studied by trypanosome counts in blood. Changes in morphology were estimated by Giemsa stained films in which the percentages of either typically slender or stumpy forms were recorded. In one infection daily

records of lengths were made. The course of infections with different strains varied from a continuous increase in parasitaemia until death to a long infection with many relapses. Obvious changes in morphology occurred consistently with the remissions and relapses. At the beginning of an increase in parasitaemia, most of the trypanosomes were slender and few stumpy. The relative proportions then progressively altered, so that, when the conc. of trypanosomes in the blood fell, few were slender and most stumpy. No satisfactory criteria were found by which every trypanosome could be classified as either slender, intermediate or stumpy, and division into these forms was therefore arbitrary. Cortisone acetate was injected daily at 5 mg./kg. into rats infected with one strain of *T. rhodesiense*: the proportion of slender forms was much greater than in controls given no cortisone. It is suggested that the morphological changes are governed by variability in the antigenicity of the trypanosomes and the antibody response of the host. The theory is advanced that the slender forms are variants against which antibodies have not yet been produced and that these are mainly responsible for multiplication, whereas the stumpy, including the posteronuclear, trypanosomes are formed from the slender forms by the action of antibodies: they rarely divide, and are mostly destroyed, although some may possibly give rise to new variants. The "intermediate" form represents a transitional stage between the slender and the stumpy form. The relationship between relapses and morphology cannot always be easily observed owing to the heterogeneity of recently isolated strains.—D. Poynter.

Maclennan, K. J. R. (1957). **A staining technique for the identification of trypanosomes in thick blood films.**—*Trans. R. Soc. trop. Med. Hyg.* **51,** 301-302. **729**

The centre of a clean slide is touched on a drop of blood which is spread with the corner of another slide to an area about half an inch in diam. The smear is dried in a level position protected from dust, flies and sunlight. Staining is as follows:— The smear is dipped for 1 sec. in 0·5% aqueous methylene blue; placed in tap water until dehaemoglobinization is complete (which may take 30 min. or more); stained in Giemsa stain, diluted 1:10 with buffered distilled water at pH 7·2; differentiated by washing momentarily in tap water, and put to dry in a sloping or vertical rack.—D. Poynter.

Pavlov, P. & Dimitrov, S. (1957). Über eine neue Trichomonasart bei Kälbern Trichomonas bovis sp.n. [***Trichomonas bovis*, a new trichomonad isolated from calves.**] —*Zbl. Bakt. I (Orig.)* **168,** 293-297. [English, French and Russian summaries.] **730**

The new species differed from other species occurring in cattle by having 4 flagella and an axostyle which protruded from the posterior of the organism. It was present in the faeces of calves with diarrhoea.—R.M.

Guillo, B., de Labonnefon, G. & Bouché, J. (1957). Essai d'enquête épidémiologique sur la trichomoniase bovine en France. [**Epidemiological survey of bovine trichomoniasis in France.**]—*Rec. Méd. vét.* **133,** 319-326. **731**

Agglutinins to 3 strains of *Tr. foetus* were found in the cervical vaginal mucus of 225 cows many of which suffered from genital disorders (sterility, pyometra, abortion). The incidence was 7 to 8%, and the geographical distribution indicates that cases are present in all parts of France.—D. Poynter.

Abelein, R. (1957). Diagnostik der Trichomonadenseuche. [**Diagnosis of trichomoniasis.**]—*Mh. Tierheilk.* **9,** 78-97. **732**

A comprehensive account of the diagnosis of *Trichomonas foetus* infection in cattle. Prophylaxis of the disease in bulls is described. —M.G.G.

Hammond, D. M. & Leidl, W. (1957). **Experimental infections of the genital tract of swine and goats with *Trichomonas foetus* and trichomonas species from the cecum or feces of swine.**—*Amer. J. vet. Res.* **18,** 461-465. **733**

Two goats inoculated intravaginally with 2–3 ml. of *Tr. foetus* culture (of genital origin) during anoestrus had infections lasting 29 and 38 days respectively. Another showed numerous trichomonads when killed at 22 days. No infections resulted from 1–2 intrapreputial inoculations with *Tr. foetus* in five goats.

Of 4 sows inoculated intravaginally with *Tr. foetus* cultures during oestrus, 3 had infections demonstrable for 3, 8 and 20 days respectively. Four of five sows inoculated similarly with cultures of trichomonads from caecal contents or faeces of pigs had infections demonstrable for 3, 4, 7, 12 and 42 days, respectively; the longest infection was associated with a normal pregnancy. A boar did not become infected after intrapreputial inoculations with either *Tr. foetus* or caecal trichomonads from pigs. No pathological changes were noted in any of these experiments, the results of which indicate a low degree of host specificity in the species of trichomonads used.—D. Poynter.

KENDALL, S. B. (1957). **Some factors influencing resistance to histomoniasis in turkeys.**—*Brit. vet. J.* **113,** 435-439. **734**

Under experimental conditions turkeys of different ages appeared to be uniformly susceptible to histomoniasis resulting either from feeding embryonated eggs of *Heterakis gallinae* or from the rectal inoculation of histomonads. The development of resistance to re-infection with *Histomonas meleagridis* was confirmed.

—D. POYNTER.

BECKLUND, W. W. (1957). **An epizootic of coccidiosis in western feeder lambs in Georgia.**—*N. Amer. Vet.* **38,** 262-264. **735**

Mortality, which was about 10%, in each of 2 flocks of lambs was investigated. P.M. examination of 2 lambs from each flock revealed mild nematode infestation in the intestinal tract, numerous coccidia closely similar to the sexual stages of *Eimeria arloingi* in the villi and intestinal walls, numerous oocysts of *E. arloingi* and some of *E. ninae-kohl-yakimovi* in the faeces. The pathological changes are described.

—T.E.G.R.

VAN TIENHOVEN, A., CRAWFORD, R. D. & DUCHAINE, S. A. (1957). **The effect of nicarbazin on spermatogenesis and semen quality.**—*Poult. Sci.* **36,** 760-762. **736**

Feeding 0·0125% nicarbazin to White Leghorn cockerels did not appear to effect their reproductive performance as assessed by spermatozoa fertilizing capacity, incidence of in-shell mortality or the condition of the testes and thyroids.—S. BRIAN KENDALL.

RAY, A. P., SHARMA, G. K. & MISRA, B. G. (1956). **Screening of anti-malarials against *P. gallinaceum* in chicks. Part VI. Evidence of two-fold acquired resistance to chloroquine diphosphate in a strain of *P. gallinaceum* in chicks.**—*Indian J. Malar.* **10,** 299-304. **737**

After 57 passages the degree of parasitaemia at a dose of 0·123 mg. chloroquine diphosphate per 50 mg. body wt. was about the same as that for the parent strain at half the dose (0·0615 mg.). At 0·123 mg. the density of parasites of the parent strain was very low (0·009%). This is taken to indicate that the resistance to the drug was doubled.—T.E.G.R.

SIMITCH, T., PETROVITCH, Z. & RAKOVEC, R. (1955). Les espèces de *Babesiella* du boeuf d'Europe. [**Species of *Babesia* in European cattle.**]—*Arch. Inst. Pasteur Algér.* **33,** 310-314. **738**

Reasons based on morphology and geographical distribution are given for considering that *Babesia divergens* is not a synonym for *B. bovis* but a distinct and separate species. *B. berbera* is a synonym for *B. bovis*. The piroplasms of cattle present in Europe, other than *B. bigemina,* are therefore *B. bovis, B. divergens* and *B. major*.

ŠKRABALO, Z. & DEANOVIĆ, Z. (1957). **Piroplasmosis in man. Report on a case.**—*Doc. Med. geogr. trop.* **9,** 11-16. [In English.] **739**

The main clinical features were fever, anaemia, haemoglobinuria, brown coloration of the skin and death after 8 days. P.M. findings included hyperaemia and oedema of the brain and its membranes, frothy mucus in the trachea and lungs, and discoloration of the liver and kidneys. Microscopic changes were: hyperaemia of the liver, kidneys, adrenals, lungs, bone marrow and brain, swelling of the reticuo-endothelial cells, nephrosis with haemoglobin in the tubules, fatty degeneration of the epithelial cells and haemorrhages in the interstitial tissue. Intracellular elements "in the shape of multiple, tiny extended rings and rods" were observed in the r.b.c. of peripheral blood and bone marrow. These were considered to be piroplasms (difficult to identify morphologically), probably *Babesia bovis*.

In a note on the epidemiology of piroplasmosis in the district it is stated that, 14 days before the patient's illness, an outbreak of *B. bovis* infection occurred among cattle (including the patient's) grazing land heavily infested with *Dermacentor silvarum* and *Ixodes ricinus*. As none of the other cattle owners developed the disease the patient's susceptibility is ascribed to splenectomy, performed some years previously.—T.E.G.R.

MACK, R. (1957). **Chemotherapy of piroplasmosis and theileriosis of farm animals in the U.S.S.R.**—*Vet. Rev. Annot.* **3,** 57-68. **740**

A review of Russian literature on the use in veterinary medicine of the drugs haemosporidin, novoplasmin, aminoacriquine, thiargen, sulphantrol and morphiplasmin.—R.M.

GAYOT, G. (1957). Recherches sur la theiériose à *Th. dispar*. V. Essai chimiothérapique par le chloramphénicol. Considérations sur le traitement. [**Research on *Th. dispar* infection. V. Treatment, including a trial of chloramphenicol.**]—*Rec. Méd. vét.* **133,** 399-408. **741**

In a controlled trial of chloramphenicol against *Th. dispar*, 5 g. daily were given for 6 days after the first rise in temp. It was shown that the compound had no specific therapeutic activity.—D. POYNTER.

JACOBS, L. & LUNDE, M. N. (1957). **A hemagglutination test for toxoplasmosis.** — *J. Parasit.* **43,** 308-314. **742**

Reproducible antigens can be produced for the haemagglutination test which offers promise of providing a practical serological procedure for diagnosis.—D. POYNTER.

DESTOMBES, P. (1957). Les sarcosporidioses au Vietnam. [**Sarcosporidiosis in cattle, pigs and deer in Vietnam.**]—*Bull. Soc. Pat. exot.* **50,** 221-225. **743**

This paper reports the first observation of a new species, *Sarcocystis cervi* from deer. In sarcosporidiosis of pigs granulomatous areas surround the cysts and calcified areas appear.
—D. POYNTER.

DESCHIENS, R., LEVADITI, J.-C. & LAMY, L. (1957). Sur quelques aspects morphologiques de sarcosporidies de divers mammifères. [**Morphology of *Sarcocystis* in different species of mammals.**]—*Bull. Soc. Pat. exot.* **50,** 225-228. **744**

Sarcocystis cuniculi differs morphologically from both *S. tenella* and *S. muris,* in that it is provided with cytanophanères (so named by Chatton & Avel, 1923); these fibrillar structures are implanted perpendicularly in the exterior of the thin capsule, forming a fine hairy covering; they are not present in the two last-named species.—D. POYNTER.

BOYNE, A. W., EADIE, J. M. & RAITT, K. (1957). **The development and testing of a method of counting rumen ciliate protozoa.** —*J. gen. Microbiol.* **17,** 414-423. [Authors' summary modified.] **745**

The limitations of methods previously used for counting rumen ciliates, and the value of developing a method of known accuracy, are discussed. Two counting-chambers, one based on the Sedgwick-Rafter cell, the other on the MacMaster eelworm-counting cell, were constructed and tested. A MacMaster-type cell was adopted. The preparation of suitable suspensions for counting organisms from washed suspensions and from rumen contents is described. The counting technique adopted was found to be reliable; its accuracy depends upon the number of organisms counted. In one sheep on a constant diet, day-to-day differences in rumen ciliate population were far greater than the differences found throughout the rumen at any one time, or the variations due to technique.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

PLACIDI, L. (1957). L'infection des suidés par le virus aphteux. [**Foot and mouth disease in pigs.**]—*Bull. Off. int. Epiz.* **47,** 464-468. **746**

The susceptibility of the pig to F. & M. disease is discussed. This animal may harbour the virus with slight or no clinical manifestations of the disease and may thus act as carrier.
—T.E.G.R.

CIACCIO, G. (1957). Essai de conservation d'une souche cobaye de type O de virus de la fièvre aphteuse sur sangsue (*Hirudo medicinalis*), hôte non habituel de ce virus. [**Passage of foot and mouth disease virus in leeches** (*Hirudo medicinalis*).] — *C. R. Soc. Biol., Paris* **151,** 261-263. **747**

G. pigs were infected with a strain of Type O virus and leeches were then put on them for half-an-hour to 3 hours. After repeated washings, to ensure against external contamination with the virus, the leeches were ground in physiological saline soln. G.pigs were then inoculated, into the plantar pad, with 0·2 ml. of the suspension. Virus was isolated from the greatest number of g.pigs during the first 2 days; after 9 days it was only isolated from a few and later only from occasional ones. Antigens were demonstrated 10–15 days after inoculation in 6 of 81 g.pigs which had shown no symptoms of infection.—T.E.G.R.

HANSON, R. P. & BRANDLY, C. A. (1957). **Epizootiology of vesicular stomatitis.**—*Amer. J. publ. Hlth* **47,** 205-209. **748**

The authors discussed the incidence of vesicular stomatitis in cattle and pigs in the U.S.A. and susceptibility of man to the virus. Details were given of infection in rural populations, acquired from domestic or wild animals, and in laboratory personnel. Clinically, manifestations in man were stated to be indistinguishable from other mild influenza-like conditions, differential diagnosis being possible only by virus isolation or serological tests.—E.G.

COOPER, P. D. (1957). **Some characteristics of vesicular stomatitis virus growth-curves in tissue culture.**—*J. gen. Microbiol.* **17,** 327-334. [Author's summary modified.] **749**

Vesicular stomatitis virus was released exponentially and fairly reproducibly after infecting chick embryo cell monolayers. This system appeared suitable for chemical studies, which are to be reported separately; the present paper is concerned with growth-curve methods

and a discussion of the system. When the average multiplicity of adsorption was 6 plaque-forming units/cell the latent period was 1–2 hours, and growth appeared to follow a one-step cycle. At least 62–75% of the cells were capable of releasing virus.

TEPPER, I. (1957). Skúsenosti s Aujeszkého chorobou na Slovensku. [**Aujeszky's disease in Slovakia.**]—*Vet. Čas.* **6**, 35-54. [In Slovak. English, French, German and Russian summaries.] **750**

During 1955–56 Aujeszky's disease occurred in 14 villages and was diagnosed in 75 unweaned piglets, 4 dogs and one cat. The virus was also isolated from rats found dead in a piggery. T. discussed the clinical picture, differential diagnosis, epidemiology, pathology and histology, and stressed the need for systematic control.

—E.G.

MORETTI, B. (1957). La pseudorabbia (M. di Aujeszky) nel bovino: riproduzione sperimentale. [**Aujeszky's disease in cattle.**]—*Zooprofilassi* **12**, 5-18. **751**

An account of Aujeszky's disease in 2 cows is given. The disease was reproduced in rabbits and g.pigs by s/c and by i/m injection of suspensions of brain and spinal cord from the affected animals. From the experimental animals it was again transmitted to rabbits, g.pigs and a calf.—T.E.G.R.

SPITZER, G. (1956). Pathologicko-histologické změny při experimentálně vyvolaném Morbus Aujeszky u laboratorních zvířat. [**Pathology and histology of lesions in experimental Aujeszky's disease.**] — *Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **29**, 211-230. [In Czech. German and Russian summaries.] **752**

An account of histological examination of brain, liver, lung and kidney material from rabbits and rats experimentally infected with the virus of Aujeszky's disease. Findings conformed largely with those described by others.

—E.G.

KANTOROVICH, R. A. (1957). [**Arctic foxes as carriers of rabies in the Far North.**] — *Veterinariya, Moscow* **34**, No. 8. pp. 51-52. [In Russian.] **753**

Arctic foxes are the principal reservoir of rabies in the Far North of the U.S.S.R. Affected animals are observed chiefly in the winter, when they wander into populated areas and attack domestic animals, usually dogs, which then develop the disease. Negri bodies were demonstrated in the brains of affected Arctic foxes and in lab. animals inoculated with material from the foxes.—M.G.G.

CHERNYAVSKII, V. P. (1957). [**Importance of mass immunization of dogs in the prophylaxis of rabies.**]—*Veterinariya, Moscow* **34**, No. 8. pp. 50-51. [In Russian.] **754**

In Kharkov, in 1955 and 1956, mass immunization of dogs against rabies was carried out. In 1955 over 100 cases of the disease were reported in dogs, but in 1956, up to the end of August, rabies was diagnosed only in 6 dogs and 3 cats. Other measures are the compulsory registration of dogs, destruction of all stray dogs and cats, and isolation of suspected dogs.

—M.G.G.

ANON. (1957). **World Health Organization. Expert committee on rabies. Third report.**—*Tech. Rep. Wld Hlth Org.* No. 121. pp. 32. **755**

The recent advances made in the study of rabies were discussed. Treatment of infected subjects with serum and vaccine was strongly recommended. Experimental investigations of the immunization of dogs and cats were discussed and suggestions made for the control of the disease. The occurrence of rabies in insectivorous bats is noted. The committee advocates potency testing of vaccines, and standardization of the tests used.—R. A. HUCK.

SIEGEL, B. V. & BATTS, A. A. (1957). **Patterns of avian viral multiplication and associated membrane histopathology in the chorioallantois of developing chick embryo.**—*Arch. ges. Virusforsch.* **7**, 498-505. [In English. Authors' summary modified.] **756**

A variant strain of canary pox virus was inoculated on to the chorioallantois of chick embryos. First there was a phase when the virus was undetectable (0–14 hours) followed by a period during which a little could be recovered (14–24 hours), then a phase of rapid synthesis (24–72 hours), the period of maximum growth (48–72 hours) being paralleled by rapid proliferation of ectodermal cells and massive mesodermal hyperplasia. In the final stage (72–136 hours) the rate of virus synthesis decreased, the virus titre remained fairly constant, while the lesions became confluent and the membrane much thickened.

VON SPROCKHOFF, H. (1957). Über das Vorkommen der Joest-Degen'schen Einschlusskörper bei Bornavirus-infizierten Kaninchen,

Meerschweinchen und Ratten verschiedenen Alters. [**Occurrence of Joest-Degen inclusion bodies in rabbits, g.pigs and rats, of various ages, infected with Borna disease virus.**] — *Mh. Tierheilk.* **9,** 129-142. **757**

The occurrence of Joest-Degen inclusion bodies in experimental Borna disease depended on the species of the host, and partly on its age. They were demonstrated in varying numbers in the brain of baby rabbits, but in older rabbits only a few or none at all were found. Rats and g.pigs, on the other hand, all developed inclusion bodies, and these were most numerous in the brain of symptomless animals; complement-fixing antibody at high titre was demonstrated in some of the sera. In a few rats which remained clinically healthy after 2 intracerebral inoculations of virus, besides the numerous Joest-Degen inclusion bodies, others of abnormal appearance were observed. These had a diameter of about 5μ, were stained reddish-blue, and their internal structure consisted of small vesicles. They were not seen in sick animals.—M.G.G.

ANON. (1957). **International Veterinary Meeting. Phnom-Penh (14-15 December 1956).**—*Bull. Off. int. Epiz.* **47,** 443-455. [In English.] **758**

At this meeting the rinderpest situation and plans for its control in Cambodia, Laos, Thailand and Vietnam were discussed. The director of veterinary services of Cambodia reported a decrease in the number of outbreaks in 1956 which he ascribed to the use of the vaccine described by Jacotot. In Laos a severe epidemic in 1944–45 accounted for about 75% of the cattle and buffaloes. An outbreak occurred in 1949 and another, suppressed by the use of vaccine, in 1953 after which no further incidence was reported. With regard to Thailand it was stated that the disease was eradicated in 1949; 2 or 3 outbreaks which occurred subsequently were easily suppressed, except one which continued for over 12 months in 2 provinces. The difficulty in controlling this outbreak is ascribed to dissemination of infection by pigs in which diagnosis is difficult and of which movement is almost impossible to control. The plans for eradication, in the respective countries, were based on vaccination, control of movement of livestock, and veterinary police measures. Some of the vaccines in common use were discussed. —T.E.G.R.

UPPAL, D. R. & SEETHARAMAN, C. (1957). **Some observations on the large-scale production of freeze-dried goat adapted rinderpest virus vaccine.**—*Indian vet. J.* **34,** 157-165. **759**

The authors described the technique followed in the preparation of the freeze-dried goat-spleen vaccine, which has been officially adopted for use in the all-India rinderpest eradication campaign. Virus titre in the freeze-dried spleen varied inversely with the atmospheric temperature when the processing was done at ordinary room temp. The freeze-dried virus remained viable during storage at −20°C. for even up to 510 days, but was destroyed within a few days at temperatures of about 35°C. In view of these findings, the authors recommended that the vaccine-producing establishments should be effectively air-conditioned and that the vaccine should be transported on ice and stored at −10° to −20°C.—R. N. MOHAN.

YORK, C. J. (1957). **Infectious bovine rhinotracheitis. A preliminary report on the development of a vaccine.**—*Allied Vet.* **28,** No. 1. pp. 7-9 & 25-26. **760**

The development is reported of a vaccine against infectious bovine rhinotracheitis ("red nose"), a new virus disease entity of low mortality but high morbidity characterized by severe inflammation of the upper respiratory passages and trachea, accompanied by excessive nasal discharge, salivation, dyspnoea, and fever. The vaccine, made with a live attenuated strain developed by tissue culture passages, has produced no signs of illness in experimental animals except a transient fever for a day, and has given complete protection. Contact control animals have not become infected, and remained susceptible to the disease.—A. ACKROYD.

MCCLURKIN, A. W. (1956). **The characterization of a virus causing calf pneumonia-enteritis and nature of the disease.**—*Dissertation, Univ. Wisconsin* p. 80. [Abst. from abst. in *Diss. Abstr.* **16,** 1754 (1956).] **761**

A study of survival indicated that the virus survived at 56°C. for 90 min., but not for 3 hours. It withstood drying at 25°C. for one year, and storage at −20°C. in saline for at least 6 months, but not 29 months. It remained viable in hydrochloric acid at a pH of 1·3 for 1 hour at 25°C., but not in sodium hydroxide at a pH of 13 for 1 hour at 25°C. The virus was also inactivated by 2% formalin for 1 hour at 25°C. It was resistant to diethyl ether for 24 hours at 4°C. It was not inactivated by penicillin, streptomycin, terramycin and chloromycetin in the concentrations used.

Fraňo, J. & Vrtiak, J. (1957). Stanovenie vel'kosti vírusu *Ecthyma contagiosum* pomocou kolódiových ultrafiltrov. **[Determination of size of the virus of contagious pustular dermatitis by ultra-filtration.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30,** 165-170. [In Slovak. English, German and Russian summaries.] **762**

The approximate size of contagious pustular dermatitis virus, determined by filtration through collodion membranes, was 100–272 mμ.—E.G.

East Africa High Commission. (1956). **East African Virus Research Institute Report, July 1955 - June 1956.** [Haddow, A. J.] pp. 52. Nairobi: Govt. Printer. [Sheep disease; Rift Valley fever p. 28.] **763**

A strain of virus isolated from mosquitoes in November 1955 behaved in many ways like that of Rift Valley fever. About the same time an outbreak of disease occurred in 20 sheep at the Veterinary Research Laboratory at Entebbe. Six sheep survived and three of these developed antibodies to the agent causing the disease. The character of the disease did not resemble either R.V.F. or Nairobi Sheep Disease. Serum from a sheep with a temperature of 107°F. was stored at −20°C. An agent was isolated from this which was pathogenic for infant and adult mice when injected intracerebrally. After 4 to 5 days adult mice became ill but did not always die. When injected intraperitoneally adult mice were not affected and 3 to 5-day-old mice did not always die though all became ill and showed symptoms of encephalitis. The agent had no immunological relationship to the 17 known human viruses against which it was tested.

Eight healthy sheep turned into the infected pasture became ill with a disease immunologically identical with that caused by the strain isolated in 1955. The symptoms in sheep are high temperature from the 3rd to 5th day after infection, when it drops and the sheep dies. P.M. examination shows congestion of the brain, petechiae on the heart, fluid in the cardiac sac, lung oedema or pneumonia and gastro-intestinal lesions. Histologically, apart from changes due to ulceration and haemorrhage in the alimentary tract, the only change noted was nephritis of the glomeruli and tubules, and this was not constant in appearance or severity.

From an animal killed when moribund the infective agent can be recovered from the spleen, mesenteric lymph nodes, lung, liver, pericardial fluid, gut and blood (in descending order of virus content).

The agent was recovered from *Rhipicephalus* ticks taken from an animal some days before it developed fever (and died) and from the animal's blood during the febrile period.

The disease can be transmitted from sheep to sheep by injecting infected serum collected during the course of the fever. Unless stored in 100% sheep serum the agent loses its potency very rapidly at −20°C. Two sheep inoculated with mouse-passage virus had potent neutralizing antibodies in their sera and withstood a dose of 30,000 mouse L.D. given s/c. An identical dose killed a non-immunized sheep. From a study of arthropods attacking domestic animals it was concluded that mosquitoes were unlikely to be the vectors of virus to sheep. Ticks appear to be the more likely vectors in both cattle and sheep.—J. A. Griffiths.

Omori, T., Harada, K., Morimoto, T., Ishii, S. & Matumoto, M. (1957). **Study on an infectious pneumonia of goat caused by a virus. VI. Experimental infection of laboratory animals with the Nagano strain of goat pneumonia virus.**—*Bull. Nat. Inst. Anim. Hlth, Tokyo.* No. 32. pp. 72-91. [In English. Japanese summary p. 71. Authors' conclusions modified.] **764**

The virus was highly pathogenic for g.pigs, infecting them readily by the intraperitoneal, intracerebral, subcutaneous, intravenous or oral routes. Intraperitoneal inoculation in particular was fatal, even with a very small dose of virus. Intracerebral inoculation of a large dose caused death usually within 48 hours. The virus was of low pathogenicity for mice. Lung consolidation was observed after intranasal instillation of a heavy dose, but the infection was rarely fatal. The virus multiplied readily in various tissues of developing chick embryos when inoculated into the yolk sac, the highest titre being obtained in the yolk sac and yolk. Pulmonary lesions developed in a young monkey after intratracheal inoculation.

Beer, J. (1957). Über den diagnostischen Wert der nichteitrigen Gehirn- und Rückenmarkentzündung bei der Untersuchung auf Schweinepest. **[The diagnostic value of non-purulent encephalomyelitis in swine fever.]**—*Mh. VetMed.* **12,** 11-15. **765**

Histological examination of the brains of 445 pigs sent for examination revealed non-purulent encephalomyelitis in 111. Swine fever was diagnosed in 102 of these 111 pigs, and paratyphoid, swine influenza or swine erysipelas in 9. The encephalomyelitis in these 9 was not pronounced. Swine fever was also diagnosed in 38 of the 334 pigs without non-purulent encephalomyelitis. In 114 herds with suspected swine fever

the brains of 2 or more pigs were examined. In 37 herds the diagnosis of swine fever agreed with the demonstration of non-purulent encephalomyelitis. In 3 herds swine fever was not diagnosed in spite of this finding in one or two of the pigs. It is concluded that this pathological finding is of value in supporting a diagnosis of swine fever.—M.G.G.

SLANINA, L'. & GDOVIN, T. (1957). Účinok ultrazvuku na vírus nákazlivej obrny ošípaných. [**Effect of ultrasonic waves on the virus of Teschen disease.**]—*Vet. Čas.* **6**, 22-28. [In Slovak. English, French, German and Russian summaries.] **766**

Exposure to the action of ultrasonic waves for 15 min. of a 10% suspension of Teschen disease brain and cord material appeared to have no effect on the infectivity of the virus nor on the duration of the incubation period.—E.G.

TIRČO, Š. (1957). Štúdium o etiologickom vzt'ahu polybakteriálnych hepatitíd k enzootickej bronchopneumonií (chrípke) ošípaných. [**Aetiological relationship between polybacterial hepatitis and influenza in pigs.**]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30**, 297-308. [In Slovak. English, German and Russian summaries.] **767**

In order to establish a possible aetiological relationship between various forms of bacterial hepatitis and swine influenza, T. examined serologically and by virus isolation, material from 30 pigs in which the cause of death was degenerative, interstitial and enzootic hepatitis. Leptospirosis was excluded. In 9 serum samples, using four strains of swine influenza virus as antigen, specific antibodies were demonstrated by the haemagglutination-inhibition test in titres of 1:32–1:512. Demonstration of virus by mouse and chick embryo inoculation failed in 5 of these 9.—E.G.

CAMPBELL, R. S. F. (1957). **Encephalitis in canine distemper.** — *Brit. vet. J.* **113**, 143-162. **768**

The neuropathological changes found in 50 dogs, diagnosed at out-patient clinics as suffering from distemper, are described. Encephalitis was detected in all except one and was associated in 25 cases with demyelination. Among the earliest changes seen were activation of the microglia and astrocytes in the subpial zones of the thalamus, mid-brain, pons and medulla. Cytoplasmic inclusion bodies were found in these reactive cells in 34 dogs, whilst intranuclear inclusions which were Feulgen negative, were observed in astrocytes especially in cerebellar and pontine areas of gliosis. Capillaritis especially in the cerebral cortex and perivascular infiltrations were also observed, but appeared to be a late development, being most common in cases of more than one month's duration.—A. ACKROYD.

GORHAM, J. R., FARRELL, R. K., OTT, R. L. & PARISOT, T. (1957). **Multiplication of attenuated egg-adapted distemper virus in the vaccinated host.**—*Vet. Med.* **52**, 289-292. **769**

Ferrets, mink and foxes were inoculated with egg-adapted distemper virus. Suspensions of spleen and lung material were prepared from the animals 3–12 days later and injected into ferrets, most of which were subsequently immune to challenge infection with virulent virus. The use of decimal dilution indicated that the titre attained by the virus was 100 times higher in the lung than in the spleen. Spleen material from 2 ferrets which were immunized against distemper before being inoculated with the egg-adapted virus had no protective effect. Of 6 ferrets given distemper antiserum 24 hours before the inoculation of egg-adapted virus, only 3 resisted challenge with virulent virus, but of 6 ferrets given antiserum and egg-adapted virus simultaneously, all were immune to challenge infection. The virus was isolated from the lungs and spleen of 3 dogs 7 or 8 days after inoculation and restored to passage in chick embryos.

—M.G.G.

NEWBERNE, J. W., JOHNSTON, R. V. & ROBINSON, V. B. (1957). **Studies on clinical and histopathological aspects of feline panleukopenia (infectious enteritis).**—*Sthwest. Vet.* **10**, 111-118. **770**

Farm kittens infected with the virus of feline infectious enteritis and killed for vaccine production 4–9 days later when a conspicuous decrease in the leucocyte count had developed, showed aplasia of the bone marrow, but the degree of epithelial damage in the mucosa of the small intestine varied. Significant swelling of the nuclei and nucleoli of the epithelial cells of the intestinal mucosa and of the lymphoid reticulum cells was observed, but in only 2 epithelial cells of one cat were masses seen which resembled type A inclusion bodies. 40% of kittens were refractory to infection.

—A. ACKROYD.

FAYET, M.-T., MACKOWIAK, C., CAMAND, R. & LEFTHERIOTIS, E. (1957). Étude comparative des virus de la fibromatose et de la myxomatose. I. Étude sérologique par la méthode d'Ouchterlony. [**Comparative study of the viruses of fibromatosis and myxomatosis. I. Serological study by Ouchterlony's method.**]

—*Ann. Inst. Pasteur* **92,** 466-472. [English summary.] **771**

Sera for the Ouchterlony test were obtained from rabbits hyperimmunized against Shope's fibroma and from one recovered from natural myxomatosis as well as others at the height of infection. The interaction of these sera with each virus was described.—R.M.

McCollum, W. H., Doll, E. R. & Bryans, J. T. (1957). **The use of periodate-treated Newcastle disease virus as antigens in the hemagglutination-inhibition test.**—*Poult. Sci.* **36,** 855-858. [Authors' summary modified.] **772**

Under controlled conditions, periodate destroyed the elution property of the virus without appreciably affecting its agglutinative capacity. Agglutination patterns formed by periodate-treated N.D.V. were stable for at least 12 hours, whereas those formed by untreated and formolized antigens had disappeared completely within 2 hours. Consequently, periodate-modified antigens appear to be extremely desirable for routine and diagnostic haemagglutination-inhibition determinations.

Baldelli, B. (1957). Studio della immunità nei polli vaccinati contro la pseudopeste con virus vivo attenuato introdotto per via orale. **[Vaccination against Newcastle disease by the oral route.]**—*Atti Soc. ital. Sci. vet., Perugia,* 1956 **10,** 729-733. Discussion pp. 733-736. [English and French summaries.] **773**

Experiments were carried out with an attenuated virus, Strain F, administered in the drinking water. Examination of various organs and tissues of slaughtered birds suggested that the virus multiplies primarily and selectively in the lungs, whence it travels to other organs, and is finally excreted in the faeces. Survivors resisted challenge by contact or by injection of 100,000 LD_{50} of fully virulent virus. In discussion on the paper it was pointed out that effective immunity was conferred on birds less than 10 days old; in older chicks there was a considerable drop in the percentage immunized. Two possible explanations are given for this phenomenon: (1) inability on the part of the younger chicks to swallow properly with the result that some of the liquid containing the vaccine goes down the respiratory passages thus conveying the virus direct to its predilection site; (2) in older chicks there is an increased resistance to the attenuated virus. The former is considered the more likely. —T.E.G.R.

Galassi, D. (1957). Bronchite infettiva del pollo: isolamento del virus e tentativo di vaccinazione con un ceppo a virulenza attenuata. **[Isolation of the virus of avian infectious bronchitis ; vaccination with an attenuated virus.]** — *Atti Soc. ital. Sci. vet., Perugia,* 1956 **10,** 717-723. [French and German summaries.] **774**

This is considered to be the first reported incidence of the disease in Italy, diagnosed on 4 different farms in the course of 48 hours, involving a total of about 8,000 birds recently imported from Belgium. Mortality, mainly in birds under 1 month, ranged from 3 to 5%. The virus was isolated on chick embryos and identified by haemagglutination-inhibition, neutralization and cross immunity tests. Satisfactory results are claimed for vaccination with an attenuated strain.—T.E.G.R.

Kelly, S. & Sanderson, W. W. (1957). **Chlorination of poliovirus.** — *Science* **126,** 560-561. **775**

Suspensions of 3 types of virus grown on HeLa cell cultures were treated with chlorine water so as to yield 0·17–0·23 p.p.m. free available chlorine residual after 1 min. at room temp. Infectivity titres were estimated by inoculating HeLa cell cultures, in duplicate, with undiluted or diluted samples and comparing degeneration over a 6-day period. Inactivation was complete in 15–30 min. in the case of 2 of the types while 4 min. were required for inactivation of the third. —T.E.G.R.

I Drescher, J. (1957). Adsorptionsvorgänge bei Virusarten. I. Mitteilung. Aufnahme der Adsorptionsisotherme und Prüfung des Einflusses des pH-Wertes und der Molarität für das System PR8-Influenza-virus-γ-Aluminiumoxyd. **[Adsorptive processes in viruses. I. Adsorption isotherms and the effect of pH and concentration on influenza virus adsorbed on γ-aluminium oxide.]**—*Zbl. Bakt. I (Orig.)* **168,** 217-234. [English, French and Russian summaries.] **776**

II. Drescher, J. & Raettig, H. (1957). Adsorptionsvorgänge bei Virusarten. II. Aufnahme der Adsorptionsisotherme und Untersuchung des Einflusses des pH-Wertes für das System T_3-Bakteriophagen-γ-Aluminiumoxyd. **[Adsorptive processes in viruses. II. Adsorption isotherms and effect of pH on T_3 bacteriophage adsorbed on γ-aluminium oxide.]** — *Ibid.* 235-243. [English, French and Russian summaries.] **777**

I & II. Formulae were given which determined the extent of adsorption of influenza virus and T_3 bacteriophage in aluminium hydroxide vaccines.—R.M.

POLLARD, E. (1957). **Inactivation of viruses for vaccine purposes using ionizing radiation and heat.** — *Yale J. Biol. Med.* **29**, 436-443. **778**

This method of inactivation is discussed. It is considered that it will effectively kill the virus without destroying its antigenic properties; the cost will not be abnormally high; and the necessity for elaborate process control will be reduced.—T.E.G.R.

DEINHARDT, F. & HENLE, G. (1957). **Studies on the viral spectra of tissue culture lines of human cells.**—*J. Immunol.* **79**, 60-67. **779**

A comparison was made of 12 tissue culture cell lines of human origin with regard to their susceptibilities to several viruses, including those of vesicular stomatitis, Aujeszky's disease, Newcastle disease, vaccinia, and rabies (Flury strain).—R.M.

SMORODINTSEV, A. A. (1957). **Factors of natural resistance and specific immunity to viruses.**—*Virology* **3**, 299-321. **780**

Phagocytes do not play a role in the destruction of viruses. Even when viruses are artificially introduced into leucocytes, *e.g.* by using chick erythrocytes with adsorbed influenza virus, they can be recovered 4 hours later. It is possible, however, that the large viruses of the psittacosis-lymphogranuloma group undergo incomplete phagocytosis.

Normal blood temp. inactivates extracellular viruses rapidly. This effect is not due to enzymes, which destroy the immunogenic and haemagglutinating properties later. Thermolabile inhibitors play a protective role, and the ability to form inclusion bodies is an important defence mechanism.

The mechanism of neutralization by antibodies varies with the complexity of organization of the virus. Smaller viruses enter a reversible union with antibodies while preserving most of their biological activity. They can be freed by ultracentrifugation or by elution on Elford membrane filters. Larger viruses stimulate the formation of two different types of antibody: (1) thermostable antibodies which resist heating at 56° and form a reversible union with the virus, and (2) thermolabile antibodies which destroy irreversibly the biological activity of the virus without the participation of complement. Antibodies of type (1) were demonstrated in lab. animals which were immunized against vaccinia and ectromelia viruses with a formalin-killed vaccine or a live virus of low titre. Antibodies of type (2) were demonstrated in fresh, undiluted sera of rabbits hyperimmunized s/c with living vaccinia virus and in rats hyperimmunized with ectromelia virus.—M.G.G.

ENRIGHT, J. B., SADLER, W. W. & THOMAS, R. C. (1957). **Pasteurization of milk containing the organism of Q fever.**—*Amer. J. publ. Hlth* **47**, 695-700. **781**

Some *Rickettsia burneti* organisms in whole raw milk survived heating for 30 min. at 143°F., but none survived when the milk was heated for the same period at 145°F., or after heating for 15 sec. at 161°F.—E.G.

See also abst. **655** (differentiation of anthrax bacilli by bacteriophage).

IMMUNITY

CHANG, T. S., RHEINS, M. S. & WINTER, A. R. (1957). **The significance of the bursa of Fabricius in antibody production in chickens. I. Age of chickens.**—*Poult. Sci.* **36**, 735-738. [Authors' summary modified.] **782**

Bursectomy of young chickens reduced antibody production resulting from injection of *Salmonella typhi-murium* antigen and sheep r.b.c. The effect of bursectomy on antibody production was greatest during the first few weeks after hatching and declined with increasing age. I/v injection of antigen produced higher antibody titres to both antigens than i/m injection. The antibody titre following a single inj. of antigen was higher at 7 than at 4, 11 or 18 days.

SCHÄFER, W. (1957). Zur Prüfung von Impfstoffen auf Freiheit von virulenten Erregern. **[Testing vaccines for freedom from virulent organisms.]**—*Zbl. Bakt. I* (*Orig.*) **168**, 204-216. [English, French and Russian summaries.] **783**

A discussion of the mathematical basis for calculating the smallest sample of vaccine which must be tested as proof of its safety.—R.M.

STRAHAN, E. (1957). **The nature of the allergic reaction in the mammalia.**—*Med. J. Aust.* August 3rd, 162-164. [Author's summary modified.] **784**

The mechanisms of anaphylaxis in different species of animals are compared and contrasted, amongst the animals themselves and with those in man. The antigen-antibody reaction is considered to be the mechanism involved. The various theories of anaphylaxis are described, the two principal theories are compared, and the advantages of the arteriolar spasm theory

are put forward to support the contention that this is the more likely one of the two. The poor results obtained with most antihistaminics are considered to be due to the fact that these substances act on the by-products of the antigen-antibody reaction and not on the reaction itself.

SOBEY, W. R. & ADAMS, K. M. (1957). **Studies in anaphylaxis. II. Dose responses to bovine plasma albumin in mice.**—*Aust. J. biol. Sci.* **10,** 475-483. [Authors' summary modified.] **785**

The factors controlling anaphylaxis are discussed. The optimal shocking dose of bovine plasma albumin was found to be 0·05 mg. for both passive and active anaphylaxis. The relation of optimal shocking dose to the amount of available antibody is discussed.

See also absts. **656** (determination of antigen concentration in B. anthracis culture filtrates); **660** (Middlebrook-Dubos test in mammary TB.); **669** (swine erysipelas vaccine); **672** (fowl cholera vaccine); **692-693** & **697-700** (brucellosis); **704** (bovine leptospirosis); **742** (toxoplasmosis); **753-755** (rabies); **759** (rinderpest vaccine); **760** (bovine rhinotracheitis vaccine); **769** (distemper vaccine); **771** (Ouchterlony's method for study of fibromatosis and myxomatosis); **772-774** (Newcastle disease); **776-777** (adsorption of viruses); **778** (inactivation of viruses for vaccines); **780** (immunity to viruses).

PARASITES IN RELATION TO DISEASE [GENERAL]

VON BRAND, T. (1957). **Recent trends in parasite physiology.** — *Exp. Parasit.* **6,** 233-244. **786**

The advances made in recent years in studies on metabolism in parasites are reviewed. Considerable research is being devoted to parasitic protozoa and worms but, apparently, little to parasitic insects. Two current lines of research on metabolism proper are being carried out: on over-all metabolism of entire organisms and on intermediate metabolism, requiring usually the preparation of homogenates or cellular fractions. Host-parasite relationship—toxic substances produced by the parasite, host enzymes and parasite enzymes—is another aspect to which attention is being directed.—T.E.G.R.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

I. CAREVIĆ, O. (1957). Insekticidnost "Gamacid" štapića za ektoparasite kokoši. [**"Gamacid" (gamma isomer of B.H.C.) against avian ectoparasites.**] — *Vet. Arhiv* **27,** 106-111. [In Croat. English and French summaries.] **787**

II. CAREVIĆ, O. & MARŽAN, B. (1957). Otrovnost "gamacid" štapića za kokoši. **[Toxicity of "gamacid" for poultry.]**—*Ibid.* 174-177. [In Croat. English and French summaries.] **788**

I. Sticks of "gamacid" (gammexane) were burned in a chamber measuring 0·35 cubic metres and fowls infested with *Lipeurus caponis, Goniodes dissimilis, Menopon gallinae* and *Dermanyssus gallinae* were exposed to the fumes for 30 sec. to 2 hours. *L. caponis, G. dissimilis* and *M. gallinae* were killed after exposure for 5 min. to fumes containing 0·0002% of gammexane, but *D. gallinae* survived. Exposure for 30 min. to 2 hours had a toxic effect on fowls and exposure to fumes of a concentration of 0·0004% for one hour killed one bird.

II. 95 fowls from day-old to 3 years of age were exposed for one hour to fumes from 1–6 burning "gamacid" sticks, which corresponded to concentrations from 0·0002–0·0012% of gammexane. Fumes from two sticks (5·2 g.) or more were lethal.—E.G.

HATCH, C. (1957). **Effect of fleece contaminants on activity of nine blow fly larvicides.**—*Irish vet. J.* **11,** 170-188. [Author's summary modified.] **789**

A series of *in vitro* tests was conducted to determine if faeces or urine had any inhibitory effect on the larvicidal activity of nine chlorinated hydrocarbon compounds. The minimum concentration of each larvicide capable of killing or adversely affecting the first instar larvae of *Phormia regina* was determined when the larvae were kept in continuous contact with the larvicide suspended in a nutritional medium which also contained faeces or urine. The results were compared to the results of a similar series of tests where the nutritional medium did not contain faeces or urine. It was shown that the presence of faeces inhibited the larvicidal activity of D.D.T., and possibly that of B.H.C., Lindane and chlordane (evidence inconclusive), but not that of perthane, methoxychlor, aldrin, dieldrin and toxaphene. The presence of urine did not inhibit the larvicidal activity of any of the compounds.

MÜLLER, K. (1957). Účinné tlumení svrabu domácích zvířat novými antiskabiotiky. **[Control of mange in domestic animals.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.*

30, 281-296. [In Czech. English, German and Russian summaries.] **790**

Good results were obtained in field trials with a calcium hydroxide dusting powder, containing flowers of sulphur and salicylic acid, against psoroptic mange in sheep. There was, however, a certain danger of animals and attendants developing pneumoconiosis. Against mange in pigs, cattle and horses, highly satisfactory results were claimed for an alcoholic suspension of potash soap containing benzyl benzoate. Mange in pigs responded well to treatment with a colloidal sulphur preparation. Mange in cattle was successfully treated with an ointment consisting of xanthogenic acid disulphide suspended in green soap. Resistance *in vitro* of mange mites to a 3% soln. of phenol, a 4% soln. of sapocresol and a soln. of caustic soda at 50°C., was also tested.—E.G.

FURMAN, D. P. & COATES, W. S. (1957). **Northern fowl mite control with malathion.**—*Poult. Sci.* **36**, 252-255. **791**

Complete control of *Ornithonyssus sylviarum* resulted from, (a) one application of 0·36 g. of 1½% malathion dust per hen, applied by puff duster; and (b) one application of 0·5% malathion spray, applied at the rate of 1 gal. per 100 hens, either as a suspension or an emulsion, by a sprayer working at 50 lb./sq. inch. Residual effects from both these treatments prevented mite re-infestation for about 30 days. Malathion was non-toxic at the rates of dosage used.—D. POYNTER.

SZWABOWICZ, A. & MIĘDZOBRODZKI, K. (1957). Toksyczność rozkruszka mącznego (*Tyroglyphus farinae*) dla zwierząt I. [**Toxicity of the meal mite** *Tyroglyphus farinae*. **I. Experiments in mice, g.pigs, pigeons and fowls.**]—*Méd. vét., Varsovie* **13**, 475-478. [In Polish. English and Russian summaries.] **792**

The authors fed *Tyroglyphus farinae* mixed with the food to 3 white mice, 6 g.pigs, 3 pigeons, 4 hens and 2 cockerels; each received 250 to 15,000 parasites daily for 4–14 days and all remained healthy. In an *in vitro* experiment *T. farinae* were placed in synthetic gastric juice; after 1 hour only about 3% of the parasites remained alive, after 2 hours 1·7% and all were dead after 3 hours.—M. GITTER.

HARBOUR, H. E. (1957). **The control of external parasites.**—*Vet. Rec.* **69**, 906-911. **793**

This review of the methods at present used for the control of external parasites deals with the aspects of chemical control:—dipping, spraying, dusting, perch paints, rubbers and pressure-pack sprays. The control of cattle ticks, *Dermatobia hominis* and screw worms is discussed and the systemic application of insecticides is briefly mentioned.—D. POYNTER.

KARLOG, O. (1957). **Determinations of parathion, para-oxon and p-nitrophenol in organic tissue material.**—*Acta pharm. tox., Kbh.* **14**, 92-100. [Author's summary modified.] **794**

An analytical method for chemical determination of unchanged parathion, para-oxon and *p*-nitrophenol in biological material is described. The method was tested by analysing organs etc., after oral administration of parathion to rabbits. It was shown that parathion may be converted into para-oxon not only in the liver but also in the stomach and intestines.

See also absts. **695** (role of arthropods in transmission of brucellosis); **727** (E.A.T.R.O., report); **763** (East African Virus Research Institute, report).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

GOLVAN, Y. J., CHABAUD, A. G. & GRÉTILLAT, S. (1957). *Carmyerius dollfusi* n. sp. (Trematoda, Gastrothylacidae), parasite des bovidés à Madagascar. [*Carmyerius dollfusi* **n. sp., a parasite of cattle in Madagascar.**]—*Ann. Parasit. hum. comp.* **32**, 56-70. **795**

This trematode was very pathogenic in calves aged 1–18 months in Madagascar, where some herds lost 30–35% of their youngstock. It attached itself to the mucosa of the oesophageal groove, often at a density of 5–15 parasites per sq. cm., and caused progressive emaciation and anaemia, often with diarrhoea. *C. spatiosus* also occurred in the rumen in Madagascar.—R.M.

I WINTERHALTER, M. & DELAK, M. (1956). Liječenje fascioloze svinja supkutanom aplikacijom tetraklormetana (carbonei tetrachloridum). [**Treatment of fascioliasis in pigs by subcutaneous injection of carbon tetrachloride.**] — *Vet. Arhiv.* **26**, 225-228. [In Croat. English and French summaries.] **796**

II. DELAK, M. (1957). Pokušaj liječenja trihuroze svinja supkutanom aplikacijom tetraklormetana (carbonei tetrachloridum). [**Experimental treatment of** *Trichuris* **infestation in pigs by subcutaneous injection of carbon tetrachloride.**]—*Ibid.* **27**, 140-144. [In Croat. English and French summaries.] **797**

I. A 3:1 mixture of CCl_4 and medicinal paraffin in doses of 1–6 ml. according to body weight was injected s/c into the flank of 140 pigs, weighing between 15–84 kg. with varying degrees of liver fluke infestation. Five days after injection faeces were free from ova of *F. hepatica* although the number of other helminth ova present was unchanged. Dead flukes were found P.M. in the liver.

II. Good results against *Trichuris trichiura* infestation in 14 pigs weighing 14–70 kg. were claimed with even higher doses of this CCl_4–liquid paraffin mixture. Single doses of 0·6–3 ml/kg body wt. or two doses of up to 1 ml each/kg. body wt. were stated to have produced no ill effects apart from local reactions.—E.G.

MANDAHL-BARTH, G. (1957). **Intermediate hosts of schistosoma. African *Biomphalaria* and *Bulinus*. I.**—*Bull. World Hlth Org.* **16,** 1103-1146. [French summary. Author's summary modified.] **798**

This is an attempt to classify all described species of African *Biomphalaria* and *Bulinus* snails. It is based upon the author's examination of a large number of specimens collected from various parts of Africa. The variations attributable to age, environment and genetic factors which may be noted in the taxonomic characters are discussed, and some new species and subspecies are established. For each recognized species and subspecies the author gives the distinguishing character, the geographical distribution, and a list of synonyms.

ENDREJAT, E. & BHATTACHARJEE, M. (1957). **A field method for detecting trematode eggs particularly schistosome eggs in cattle faeces.**—*Indian vet. J.* **34,** 330-332. **799**

Trematode eggs were detected more often on examination of gravity sediment of faecal suspensions in nitric acid (of sp.gr. 1·40, containing 65% pure acid) and petrol than by flotation with saturated sodium chloride solution or by examining centrifuge deposit of faecal suspensions in hydrochloric acid and ether.

—R. N. MOHAN.

GAILIUNAS, P. (1957). **Cysticercosis in cattle as a herd problem and its significance to the public health.**—*Vet. Med.* **52,** 379-381. **800**

The observations indicated a relatively high prevalence of *C. bovis* in western Michigan cattle. It is pointed out that in areas where local meat inspection is inadequate, or is not performed, herds affected with cysticercosis may cause tapeworm epidemics in man.

—D. POYNTER.

VARGES, W. (1957). Intensivierung der Finnenschau—ein Beitrag zur Lösung des Rinderfinnenproblems. [**Need for intensifying examinations for *Cysticercus bovis*.**]—*Mh. VetMed.* **12,** 320-321. **801**

From the examination of six sites in each of 1000 cattle carcasses for the presence of *C. bovis* the author concluded that the masseter muscles may indeed be regarded as a predilection site, but suggested that the examination of the heart and tongue should be made obligatory in meat inspection as this would considerably increase the number of infected carcasses detected.—J. F. MICHEL.

PAPACHRISTOPHILOU, P. (1957). L'hydatidose en Grèce chez les ruminants et les porcs. [**Echinococcus infection in ruminants and pigs in Greece.**]—*Bull. Off. int. Epiz.* **47,** 469-485. **802**

Echinococcus infection in cattle was: 692 of 51,994 calves; 348 of 4,545 heifers and 9,400 of 20,919 adults. In sheep it was: 818 of 189,444 lambs; 857 of 9,160 two-year-olds; 70,438 of 130,647 adults. In goats it was: 9 of 61,583 kids; 110 of 13,588 two-year-olds; 3,461 of 95,053 adults; in pigs, 1,297 of 55,547. Of 10,146 dogs examined 2,477 were infected. The incidence and epidemiology of the disease and its public health importance are discussed and control measures are suggested.—T.E.G.R.

AKRAMOVSKII, M. N., EGOROV, Y. G. & BASHKIRTSEVA, E. V. (1957). [**Trials with arsenical preparations in *Moniezia* infestation of lambs.**]—*Veterinariya, Moscow* **34,** No. 4. pp. 43-44. [In Russian.] **803**

Arsenates of copper, zinc, iron (ferric and ferrous) and tin were very effective against *Moniezia* in lambs at dosages of 0·3–0·5 g. by mouth, and these amounts were not toxic, except for copper arsenate. Worms were passed in the faeces from 12 to 30 hours after treatment. Aluminium arsenate acted rather rapidly because it increased peristalsis. [For other experiments with tin arsenate in *Moniezia* infestation see I. T. Chubabriya (1955) *Trud. gruzin. nauchno-issled. vet. Inst.* **11,** 233–240.] The disadvantage of these compounds was that they were not readily available. On the other hand, Paris Green (cupric acetoarsenite) and calcium arsenate were available at every farm depot and were very cheap. Paris Green was effective at dosages of 0·1 g. for lambs aged 2 months and 0·3 g. for lambs aged 5 months; calcium arsenate was effective at 0·3 g. at 2 months of age and 0·5 g. at 5 months. Examination of faeces and

after slaughter revealed 100% efficacy against this tapeworm. The compounds were administered in gelatin capsules.—R.M.

EDGAR, S. A. & TEER, P. A. (1957). **The efficacy of several compounds in causing the elimination of tapeworms from laboratory-infected chickens.** — *Poult. Sci.* **36,** 329-334. **804**

The taeniacidal activity of 12 compounds of Di-n-butyl tin (DBT) was tested in birds experimentally infected with *Raillietina cesticillus* or *Choanotaenia infundibulum*. A single dose of 16 mg. of the oxide, 37·5 mg. of the maleate or dibenzyl tin dichloride, or 75 mg. of the sulphide caused the elimination of 85–100% of either species of worm; other compounds were less effective or ineffective. With 42·8 mg. of the dilaurate or 37·5 mg. of the maleate, consumed during 48 hours at the rate of 250 mg./kg. of feed, elimination of *R. cesticillus* was 94 and 100% respectively; with 45·3 mg. dibenzyl tin dichloride it was 22% and with 22·5 mg. DBT oxide, at 125 mg./kg. of feed, it was 72%. "Polystat" (15% acetyl-(*p*-nitrophenyl) sulphanilamide, 10% DBT dilaurate, 10% dinitrodiphenylsulphonylethylenediamine and 3·75% nitro-4-hydroxyphenylarsonic acid), fed continuously at the rate of 4 lb./ton of feed, prevented the development of *Ascaridia galli* and *C. infundibulum*. Dibenzyl tin dichloride and the oxide, sulphide, maleate and dilaurate of DBT had no toxic effects on the birds.—T.E.G.R.

BEARUP, A. J. (1957). **Experimental vectors of the first larval stage of *Dibothriocephalus latus* (Cestoda) in Australia.**—*Aust. J. exp. Biol. med. Sci.* **35,** 187-192. **805**

Of several copepod species examined only the calanoid *Boeckella minuta* was found to be a suitable host for the procercoid stage of *D. latus* (*Diphyllobothrium latum*). Infections of *D. latus* have been reported in man in Australia, and although at present no cases of locally acquired infection are known, the species could possibly become established. B. considered that dibothriocephalid worms recovered from dogs in New South Wales and reported to be *Diphyllobothrium latum,* belonged to the genus *Spirometra*.—R. I. SOMMERVILLE.

SARWAR, M. M. (1957). **A critical survey of the representation of the genus *Trichuris* in ruminants in Indo-Pakistan.** — *Acta trop., Basel* **14,** 225-227. **806**

S. stated that he examined collections of helminth parasites from ruminants in Pakistan and India and that he was unable to identify *Trichuris ovis*. He concluded therefore that this worm is either very rare in those countries or that it may not occur there at all. *T. skrjabini,* alone or together with *T. globulosa,* was present in material collected from sheep and goats, and *T. discolor,* alone or together with *T. globulosa,* in cattle and buffaloes.—E.G.

DEIANA, S. (1957). La coli-tiflite parassitaria degli equini. I. I parassiti dei generi *Strongylus, Poteriostomum* e *Triodontophorus*. **[Presence of *Strongylus, Poteriostomum* and *Triodontophorus* in horses with coli-typhlitis in Sardinia.]** — *Riv. Parassit.* **18,** 5-12. [English summary.] **807**

Of 108 horses examined in Sardinia 3% harboured *Strongylus equinus,* 80% *S. edentatus,* 100% *S. vulgaris. Poteriostomum imparidentatum* was present in 2·7%, *Triodontophorus serratus* in 22·2%, *Tr. brevicauda* in 3·7%, and *Tr. tenuicollis* in 2·7%.—E.G.

HERLICH, H. (1957). **Preliminary observations on calves experimentally infected with *Trichostrongylus colubriformis.*** — *Proc. helm. Soc. Wash.* **24,** 139-140. **808**

Each of nine Jersey calves was given a single dose of infective larvae of *T. colubriformis* ranging from 61,400 to 500,000 larvae. Patent infections were produced in all the calves, the first eggs appearing in the faeces after 15–23 days. Four of the calves receiving large doses of larvae died after showing anorexia and diarrhoea. Broadly, the effect on the calf was directly related to the number of larvae administered.—J. F. MICHEL.

MCGEE, G., RUSSOMANNO, R., & SANDGROUND, J. H. (1957). **An expeditious method for counting trichostrongylids and other helminths of the small intestine.**—*J. Parasit.* **43,** 315-317. **809**

The authors described a method they used for the recovery and enumeration of adult *Nippostrongylus muris* from the intestines of rats. The intestine is turned inside out and warmed in weakly acid saline, whereupon the activity of the worms separates them from the mucosal tissue and from the intestinal contents.

—J. F. MICHEL.

BOCH, J. (1957). Bekämpfung des Magendarmwurmbefalles des Wildes. **[Control of stomach worms in wild deer.]**—*Mh. Tierheilk.* **9,** 230-235. **810**

The faecal worm egg count of deer on five estates was greatly reduced when they received 10 g. per head per day of "Helmicidan" (a product containing 10% of phenothiazine) in the supplementary feed which they were offered.

There was no scouring in the spring and losses of fawns were low. The general condition of the animals was better than in previous years, though this may have been due to favourable climatic conditions and more generous feeding. In experiments with chamois which were offered salt licks containing phenothiazine promising results were also obtained.—J. F. MICHEL.

GRAESSER, F. E. (1957). **Lungworm disease of cattle in Alberta.**—*Canad. J. comp. Med.* **21,** 355-358. [French summary.] **811**

Each year it appears that more cases of lungworm infestation of cattle in Alberta are being recognized. The case history of one severe outbreak is described in detail. The subject is reviewed to emphasize the economic inportance of the disease.—R. V. L. WALKER.

SWANSON, L. E., WADE, A. E., DENNIS, W. R. & STONE, W. M., JR. (1957). **Control of lungworm disease of cattle.**—*Ann. Rep. agric. Exp. Sta., Univ. Fla,* 1956 pp. 143-144. **812**

The administration of from 5,000 to 132,000 larvae of *Dictyocaulus viviparus* to 29 hand reared calves produced symptoms of parasitic bronchitis but only one calf died. Four calves running with their dams also became infected when given viable larvae. Various chemotherapeutic agents were used on these experimentally infected calves and also on a further eight naturally affected animals, but without effect. Injections of immune serum were also without effect on established infections.—J. F. MICHEL.

BORODINA, V. V. (1957). **[Factors influencing infection of sheep with *Dictyocaulus filaria*.]**—*Veterinariya, Moscow* **34,** No. 4. pp. 38-40. [In Russian.] **813**

From the results of her own experiments, B. refuted the suggestion of D. I. Pansyuk [*Veterinariya* **32,** No. 2 p. 44 (1955)] that sheep could become infected by percutaneous penetration of infective larvae during the period of winter housing.—R.M.

KASSAI, T. (1957). Die Synonymie des Cystocaulus ocreatus. **[Synonyms of *Cystocaulus ocreatus*.]**—*Acta vet. hung.* **7,** 157-163. [In German.] **814**

In the literature the names *Cystocaulus ocreatus* and *Cystocaulus nigrescens* are used for one and the same species. K. showed that the correct name for the species in question is *Cystocaulus ocreatus*.—J. F. MICHEL.

KASSAI, T. (1957). Über die geographische Verbreitung der Protostrongylidose der Schafe. **[Geographical distribution of protostrongylidosis in sheep.]**—*Acta vet. hung.* **7,** 165-173. [In German.] **815**

K. made a survey of the small lungworms of sheep in Hungary and found that the following species occur:— *Cystocaulus ocreatus, Protostrongylus rufescens,* other species of *Protostrongylus, Muellerius capillaris* and *Neostrongylus linearis.* In the material examined the small lungworms were of more frequent occurrence than *Dictyocaulus filaria.* In attempting to discuss the distribution of the small lungworms in the rest of the world, he considered that shortcomings in the methods of examination employed by many authors made it difficult to draw definite conclusions.—J. F. MICHEL.

KASSAI, T. (1957). Schnecken als Zwischenwirte der Protostrongyliden. **[Snails as intermediate hosts of protostrongyles.]**—*Z. Parasitenk.* **18,** 5-19. **816**

On sheep pastures in Hungary the snails *Helicella obvia, Zebrina detrita, Theba carthusiana, Cepaea vindobonensis, Helix pomatia* and *Abidia frumentum* acted as obligatory intermediate hosts for the lungworms *Cystocaulus ocreatus, Protostrongylus rufescens* and *Muellerius capillaris.* The smaller snails, *e.g. A. frumentum,* were of greater importance in the epidemiology of lungworm infestation than the larger species (*H. obvia*).—R.M.

BULJEVIĆ, S. M. (1957). Prilog poznavanju raširenosti plućne strongiloze svinja na teritoriji sreza Pančevačkog. **[Incidence of lungworms in pigs in the Pančevo district, Yugoslavia.]**—*Vet. Glasn.* **11,** 388-392. [In Croat. French summary.] **817**

Of 1610 pigs examined in the Pančevo district, 1014 were infested with lungworms. Of these about 29% harboured *Metastrongylus apri,* about 24% *M. pudendotectus,* and about 47% both species.—E.G.

DAYTON, D. A. (1957). **The earthworm, *Eisenia lonnbergi,* a new intermediate host for swine lungworms.**—*J. Parasit.* **43,** 282. **818**

Earthworms identified as *Eisenia lonnbergi* were exposed to a mixture of the embryonated eggs of *Metastrongylus elongatus* and *M. pudendotectus.* Three weeks later the earthworms were found to contain third stage larvae which were apparently those of one or other of these species of lungworms.—J. F. MICHEL.

ABDOU, A. H. & SELIM, M. K. (1957). **On the life-cycle of *Subulura suctoria,* a caecal nematode of poultry in Egypt.**—*Z. Parasitenk.* **18,** 20-23. [Authors' summary modified.] **819**

In the course of random examination of

various insects for cysticercoids of tapeworms, larvae of round worms were found attached to the intestinal wall of beetles, *Ocnera hispida* and *Blaps polycresta*. Material from infected beetles was fed to 2 chickens; embryonated eggs were obtained from their droppings and on P.M. examination adult *Subulura suctoria* worms were found.

LEBAILLY, J. & CADILLAC, G. (1957). Péritonite septique par rupture intestinale parasitaire sur un cheval arabe-barbe. [**Peritonitis following rupture of the intestine by parasites, in a horse.**]—*Rev. Cps vét. Armée* **12,** 12-13. **820**

An account of rupture of the small intestine and septic peritonitis in a horse with ascarid infestation.—T.E.G.R.

KOULA, V. & VESELÁ, O. (1956). Studium účinků chlorovaných uhlovodíků a některých derivátů substituované kyseliny karbaminové proti škrkavce vepřové *Ascaris suum Goeze* in vitro. [**Evaluation *in vitro* of chlorinated hydrocarbons, carbamates and other anthelmintics, against *Ascaris suum*.**]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **29,** 175-188. [In Czech. English, German and Russian summaries.] **821**

Of 44 substances tested *in vitro* against *A. suum*, *p*-dimethyl anilinotrichlorethanol hydrochloride, hexachloropropene, *p*-benzylphenol carbamate and *p*-benzylphenol ethanolamine carbamate were the most effective. Studies on the clinical effects of these substances are in progress.—E.G.

SURYNEK, J. (1956). Vliv bílkovinného extraktu z askarid na organismus psa. [**Effect of a protein extract from *Ascaris* on dogs.**] — *Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **29,** 477-488. [In Czech. English, German and Russian summaries.] **822**

Doses of 0·025 and 0·05 ml./kg. body wt. of protein extract prepared from *Ascaris suis*, given i/v to dogs, produced anaphylactic shock even in those in which faecal examination for intestinal helminths was negative. Anaphylaxis was thought to be either the normal reaction in dogs to these extracts, or to be due to sensitization by previous natural infestation.—E.G.

LEBEDA, M. & MACH, P. (1957). Působení bílkovinného extraktu z askarid na organismus zvířat. I. [**Effect of *Ascaris* protein extracts on animals. I. Toxicity and anaphylaxis.**]—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30,** 215-226. [In Czech. English, German and Russian summaries.] **823**

SURYNEK, J. & MACH, P. (1957). Působení bílkovinného extraktu z askarid na organismus zvířat. II. Příspěvek k otázce vzniku přecitlivělosti. [**Effect of *Ascaris* protein extracts on animals. II. Hypersensitivity.**]—*Ibid.* 261-280. [In Czech. English, German and Russian summaries.] **824**

I. There were no anaphylactic reactions in 24 non-sensitized rabbits given i/v doses of 0·125–1·0 ml./kg. body wt. of protein extract prepared from *Ascaris*. Certain effects, however, on blood pressure, heart and respiratory rate were observed, the intensity of the reaction depending on the dose. Large doses produced reactions in the blood picture, closely resembling those seen in anaphylactic shock due to foreign protein, but changes in the blood protein spectrum were not characteristic for anaphylaxis.

II. Anaphylactic shock was produced in rabbits by i/v inj. of protein extracts of *Ascaris suis*, 25 and 30 days after experimental infestation. Similar results were obtained in naturally infested pigs. The shock reaction and its relation to sensitization were studied by electrophoretic analysis of serum proteins.—E.G.

BEHRENS, H. (1957). Untersuchungen über den Wurmbefall bei Schweinen und seine Behandlung mit Piperazinadipat. [**Helminth infestation in pigs and its treatment with piperazine adipate.**]—*Dtsch. tierärztl. Wschr.* **64,** 382-384. **825**

By the examination of faeces samples from 346 groups each of 4 fattening pigs, B. found that in the district of Hanover 51% were infected with *Ascaris lumbricoides* and 57% with other nematodes. The incidence of *A. lumbricoides* decreased with increasing age of the host, but that of other nematodes increased. Treatment with 250 mg. of piperazine adipate administered in the feed removed the entire infestation of *A. lumbricoides* for a few weeks as judged by faecal egg counts. Piperazine adipate removed only half the worms of other species in young pigs; it was ineffective in breeding sows.

—J. F. MICHEL.

SCHÜRMANN, E. & GREUEL, E. (1957). Vergleichende Untersuchungen über die Wirksamkeit und Verträglichkeit verschiedener Wurmmittel bei der Bekämpfung der Ascaridiasis des Geflügels. Dritte Mitteilung. Untersuchungen über die Verträglichkeit des Piperazincitrats unter besonderer Berücksichtigung der Legetätigkeit der Hühner. [**Efficacy and safety of various anthelmintics against ascarids in poultry. III. Tolerance of**

fowls to piperazine citrate.]—*Arch. Geflügelk.* **21,** 246-251. [English summary.] **826**

The administration of piperazine citrate in doses of 250 mg. and 500 mg. respectively appeared to have no adverse effect on 300 laying hens and did not affect their egg-production.

—J. F. MICHEL.

ŻARNOWSKI, E. & DARSKI, J. (1957). Badania nad terapią glistnicy kur. **[Treatment of *Ascaridia* infestation in fowls.]**—*Méd. vét., Varsovie* **13,** 387-393. [In Polish. English and Russian summaries.] **827**

225 fowls 1–2 months old were infected with 120–150 infective eggs of *A. galli* and 8 types of treatment were tested; carbon tetrachloride, phenothiazine, oil of chenopodium, pyrethrum, petroleum benzene, synthetic benzene, sodium fluoride and piperazine adipate. Of these only carbon tetrachloride proved 100% effective when a single dose of 2 ml./kg. body wt. was given by stomach tube. Piperazine adipate mixed with drinking water at the rate of 8 g. per 4·5 litre (0·17% soln.) freed 94·1% of birds from parasites; pyrethrum, mixed with food at the rate of 2% for 7 days, 71·4%; and a single dose of phenothiazine, 1·5 g./kg. body wt., 30%. Sodium fluoride, petroleum and synthetic benzene proved to be of low efficacy and high toxicity. The authors recommend carbon tetrachloride for individual and piperazine or pyrethrum for flock treatment.—M. GITTER.

CHODNIK, K. S. (1957). **Aortic onchocerciasis due to *Onchocerca armillata* in cattle in Ghana, with special reference to the morphology of the parasite.** — *Ann. trop. Med. Parasit.* **51,** 216-224. **828**

Aortic changes consisting of extensive sinuous tunnelling under the intima, occasional nodule formation, and very marked corrugation of the internal wall caused by *O. armillata* were found in 95% of 450 cattle. The distinguishing features of the parasite are: (i) the long oesophagus, average length 3·0 mm.; (ii) prominent caudal papillae, of which 2 pairs lie lateral to the anus, and at least one pair is close to the end of the tail; and (iii) wide caudal alae in the males. Photographs of the parasite and lesions are given.—D. POYNTER.

ANANTARAMAN, M. & VICTOR, D. A. (1957). **Cerebro-spinal nematodiasis. I. *Setaria* of bovines in India.**—*Indian vet. J.* **34,** 165-171. **829**

Worms collected from the peritoneal cavity of cattle and buffaloes in the slaughter-house in Madras were identified as *S. digitata*, a species held to be distinct from *S. cervi*. The position regarding the incidence of *Setaria* worms in different species of animals was briefly reviewed, especially in relation to their possible connexion with paraplegia in goats and cattle observed in certain parts of India.—R. N. MOHAN.

RAHMAN, M. H. (1957). **Observations on the mode of infection of the hump of cattle by *Stephanofilaria assamensis* in East Pakistan.** —*J. Parasit.* **43,** 434-435. **830**

Hump sore was found in 25% of 25,000 cattle. The filariae were mainly confined to the superficial skin and once were found in blood from the ear vein. No rise of temperature nor systemic disturbance were noted. *S. assamensis* is viviparous. To transmit larvae from diseased cattle to unaffected cattle it is necessary to break the skin. Cattle often create wounds of the hump by rubbing on rough surfaces; in such wounds flies find ample food and transmit larvae which irritate the wounds and mature so that within a few months a fully developed hump sore appears.—D. POYNTER.

HOLZ, J. & ADIWINATA, R. T. (1957). Untersuchungen über die Antimosan-Therapie der Stephanofilariose beim Rind. **["Antimosan" (stibophen) therapy in *Stephanofilaria* infestation of cattle.]**—*Vet.-med. Nachr.* No. 1. pp. 25-35. **831**

By examination of naturally infected cattle the authors confirmed that the adults of *Stephanofilaria dedoesi* are located in skin lesions while the larvae occur mainly in the lymphatic system. There was no evidence of a diurnal periodicity in the appearance of larvae in the lymph nodes. Treatment with stibophen, three s/c injections of 3·5 g. per 250 kg. body wt. at weekly intervals led to clinical recovery and the disappearance of larvae from the lymphatic system.

—J. F. MICHEL.

SHUMARD, R. F. (1957). **The toxicity to chickens and the anthelmintic effect of two forms of a piperazine-carbon disulfide complex on *Ascaridia galli* and *Heterakis gallinae*.**—*Poult. Sci.* **36,** 613-618. **832**

Maximum effective anthelmintic doses of two forms of piperazine–carbon disulphide complex against *Ascaridia galli* (568 mg./kg. of the powdered product and 0·47 ml./kg. of the liquid) had a wide margin of safety. Dosage as high as 950 mg./kg. of the powder and 0·93 ml. per kg. of the liquid failed to remove *Heterakis gallinae*: while these doses do not cause acute toxicity, they are not recommended.

—D. POYNTER.

GALL, Z. & DELIĆ, S. (1957). Helminti crijevnog trakta pasa iz Sarajeva i bliže okoline. **[Helminth parasites in dogs in Sarajevo.]** — *Veterinaria, Sarajevo* **6,** 175-178. [In Croat. English summary.] **833**

Of 100 dogs examined 52 harboured *Trichuris vulpis,* 49 *Uncinaria stenocephala,* 32 *Toxocara canis,* 27 *Dipylidium caninum,* 23 *Ancylostoma caninum,* 9 *Mesocestoides lineatus,* 25 *Taenia hydatigena,* 1 *T. pisiformis* and 12 *Echinococcus granulosus.* All the dogs were free from *Leishmania* infection.—E.G.

See also abstr. **957** (report, Gt. Britain); **958** (book, helminths of pigs).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

DAMODARAN, S. (1957). **Melanomata in buffaloes.**—*Indian vet. J.* **34,** 325-329. [Author's summary modified.] **834**

An account of a case of malignant melanoma in a female buffalo. The macroscopic and microscopic appearances are described. The question of colour predisposition to melanomatosis is discussed.

MARGAROLI, D. (1957). Contributo allo studio della neurofibromatosi del bovino. **[Neurofibromatosis in a cow.]**—*Progr. vet., Torino* **12,** 176-180. **835**

The condition was encountered in an otherwise normal slaughter cow and involved the left brachial plexus and the heart. In the former site there were shining fatty white nodules of a fibrous consistency giving the nerves the appearance of knotty fibrous cords having a diameter of 2–4 cm. Greyish white, irregularly oval nodules about 6 cm. long covered the surface of the heart along the left longitudinal sulcus. The microscopic appearance of the affected tissues is described and the nomenclature of the tumours discussed. It is considered that the tumours are not pure neurinomas owing to the presence of fibrous tissue and the name neurofibroma is, therefore, suggested.—T.E.G.R.

SOVA, Z. (1957). Několik nových pozorování u leukemií psů a koně. **[Leucosis in dogs and horses.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **30,** 227-248. [In Czech. English, German and Russian summaries.] **836**

Of 918 horses and dogs examined at the Pardubice veterinary hospital over two years, leucosis was diagnosed in three dogs and one horse. 403 haematological examinations were carried out. In one dog there was chronic lymphatic leucosis, leucocyte count 105,000/cu.mm. Another had acute non-leucaemic myeloid leucosis, leucocyte count 11,600/cu. mm. In the third dog there was microblastic myelosis with a leucocyte count of 39,500/cu. mm. The horse had chronic lymphocytic leucosis, with a leucocyte count of 151,000 and an erythrocyte count of 2,150,000/cu. mm. A temporary reduction in the leucocyte count was achieved with daily doses of 50 mg. of trichlorethylamine hydrochloride ("TS 160") given i/v for three days. —E.G.

SCHOOLMAN, H. M., SPURRIER, W., SCHWARTZ, S. O. & SZANTO, P. B. (1957). **Studies in leukemia. VII. The induction of leukemia in Swiss mice by means of cell-free filtrates of leukemic mouse brain.**—*Blood* **12,** 694-700. [Interlingua summary. Authors' summary modified.] **837**

A 33-week-old Swiss female mouse that had been caged with AKR males exhibited a "spontaneous" lymphoblastoma resembling the spontaneous disease in the AKR strain. Suspensions of the tumour cells from this animal did not grow when inoculated into AKR mice, but grew progressively in both Swiss and DBA mice, and caused a leucaemia. Cell-free filtrates of leucaemic Swiss or DBA mouse brain induced leucaemia in 48 of 106 adult Swiss mice inoculated intracerebrally and in 39 of 55 animals inoculated intraperitoneally. The leucaemia appeared in the majority of the animals within 1–3 weeks after inoculation. Cell-free filtrates of the leucaemic tumour failed to induce leucaemia.

CHUBB, L. G. & GORDON, R. F. (1957). **The avian leucosis complex—a review.**—*Vet. Rev. Annot.* **3,** 97-120. **838**

The authors suggested a classification of the avian leucosis complex in which lymphoid leucosis is separated from lymphomatosis, being grouped with myeloid leucosis and erythroleucosis. They discussed the incidence, aetiology, transmission, diagnosis and control of these diseases.—R.M.

GROSS, M. A. (1957). **The artificial and natural transmission of avian visceral lymphomatosis.** —*Sthwest. Vet.* **10,** 288-298. **839**

A useful review, for the non-expert but interested reader, of experimental work in this field, with explanatory diagrams and a bibliography of 100 references. Both the artificial and

natural transmission of avian visceral lymphomatosis are discussed. It is concluded that the disease is both transplantable and transmissible. The importance of such predisposing factors as age at exposure to infection, genetic constitution, and lack of acquired immunity, is discussed, and particular attention is given to contact transmission and egg transmission. "Contact transmission takes place at an early stage of the infection; it is considerable at hatching, but even greater during the brooding period." "Egg transmission of the disease is an undisputable fact; the virus is shed in eggs of certain hens from infected flocks regardless of whether these hens are normal appearing or diseased and the mortality of their progeny is similarly unrelated to the shedding of the virus into eggs". With regard to vaccination, while it is stated that at the present time a live virus vaccine holds some promise as a means of controlling the infection, more extensive field trials are indicated. —E. Cotchin.

NUTRITIONAL AND METABOLIC DISORDERS

Black, D. J. G., Morris, T. R. & Palgrave, J. A. (1957). **The value of a grass sward for breeding hens.** — *Poult. Sci.* **36**, 780-788. [Authors' summary modified.] **840**

In an experiment designed to measure the value of allowing breeding stock access to grass the following results were obtained. There was no saving in the quantity of food consumed by birds having access to grass. Egg production, fertility, and "hatchability" of the hens having access to grass was no better than that of hens running on bare earth. The vitamin A, riboflavin and pigment content of eggs laid by hens in the grass pens was higher than that of controls. There was a progressive depression in the hatchability (and vitamin A content) of eggs laid by hens fed increasing quantities of white fish meal.

Hutchinson, K. J. (1957). **Changes in the thickness, weight and protein content of the skin of two adult Merino ewes.**—*J. Aust. Inst. agric. Sci.* **23**, 238-241. **841**

Preliminary observations were made to test whether measurable changes in thickness, weight or protein content of the skin may so reflect changes in nutrition as to provide a useful measure of seasonal nutritional stresses. Two ewes were selected for similarity of body wt., wool type and skin histology, and maintained for 12 months under different nutritional conditions. Skin samples were taken from appropriate sites and measurements made every two months. Changes were recorded in skin measurements and protein content. It was concluded that the Merino skin varies noticeably in size with the plane of nutrition and that the thickness plays a large part in these variations.

Changes in skin weight were highly correlated with changes in protein content and this is cited as evidence that the skin is a site of nitrogen storage. The possibility of using a skin biopsy technique for measuring animal pasture interrelationships is discussed. However, further information would be required on the capacity of other body organs to store protein, the rate of its utilization, and on the effect of energy insufficiency on skin protein loss.—A. G. Culey.

Briggs, P. K., Franklin, M. C. & McClymont, G. L. (1956). **Maintenance rations for Merino sheep. III. The performance of adult Merino wethers fed weekly on all-grain rations of wheat, maize, oats, barley or grain sorghum.** —*Aust. vet. J.* **32**, 299-304. **842**

Groups of adult Merino wethers were given 4·0 lb. starch equivalent per head weekly as all-grain rations of wheat, maize, oats, barley or sorghum. Finely ground limestone was added to each ration to correct calcium deficiency. Each ration was fed at weekly intervals to two groups of sheep, one of which received 10 mg. cobalt per head weekly, and all groups were gradually brought on to the weekly regimen over 34 days and maintained on the rations for a further 161 days. There were no significant differences in average body weights nor in mortality rates of sheep in the various groups. Sheep fed maize had higher average plasma vitamin A levels and grew more wool than those fed other rations. Sheep given cobalt supplements had higher plasma vitamin A levels, but did not grow more wool than sheep given no supplement. Sheep given oats and barley grew more wool than those given wheat or sorghum. Sheep fed sorghum consumed the weekly ration in 2 to 2½ days without ill effects; those fed oats consumed their ration in 5 days. The practical significance of these results is discussed. The experiments provide evidence that cereal grains may be safely used as complete drought fodders when the calcium deficiency is corrected.—A. G. Culey.

Heywang, B. W. (1957). **The relative effect of two high levels of an antibiotic on laying chickens during hot weather.**—*Poult. Sci.* **36**, 871-873. [Author's summary modified.] **843**

An all-mash diet supplemented with chlor-

tetracycline at 0, 50, and 100 g., respectively, per ton of diet was fed to groups of 30 laying White Leghorns during three periods of 112 days each. Each diet was fed to the same two groups during only one of the 112-day periods. Statistical analysis of the data revealed a significantly greater egg production in the groups fed the supplement than in the other groups during hot weather only. There was little difference in the egg production of groups fed the two levels of supplement. The quantity of diet consumed per dozen eggs laid was lower during hot weather only when the supplement was in the diet, and there was little difference in the effect of the two levels.

ANDERSON, G. W., MAIM, H. M. & WRIGHT, M. L. (1957). **The role of chlortetracycline hydrochloride and intestinal microflora in the niacin and manganese requirements of chicks.** —*Canad. J. comp. Med.* **21**, 336-343. **844**

Increased growth and improved feed efficiency resulted with diets containing chlortetracycline hydrochloride (aureomycin) and all combinations of 10, 30 and 50 p.p.m. of manganese and 9, 18, and 27 mg. of niacin per lb. The antibiotic enhanced the utilization of both manganese and niacin for growth promotion but did not seemingly reduce the dietary requirement for either nutrient, and appeared to cause reduction in the pH of the caecal contents. The nutrients and antibiotic increased the caecal microflora when the diet was deficient in one or more supplement, but the antibiotic decreased the bacterial numbers when the diet was adequate in both niacin and manganese. Respiration studies revealed a close association between oxygen uptake and viable aerobic counts of the caecal contents.—R. V. L. WALKER.

MAKI, L. R. & FOSTER, E. M. (1957). **Effect of roughage in the bovine ration on types of bacteria in the rumen.**—*J. Dairy Sci.* **40**, 905-913. **845**

Three cows, two of which were fistulated, were fed a ration high in roughage (lucerne hay with or without a grain concentrate) and two other cows were fed a ration low in roughage (grain concentrate and lucerne meal). Total direct microscopic bacterial counts from rumen samples from the low roughage group were two or three times as high as in the high roughage group. Colony counts from the low roughage group were 57 to 73% of the microscopic count whereas they were only 3 to 12% of the microscopic count in the high roughage group, indicating that the ideal culture medium was not used.

Approximately one third of isolated organisms in the high roughage group produced butyric acid from glucose, whereas the majority of organisms in the low roughage group produced acetic, lactic or succinic acids.—E. J. CASTLE.

DOUGHERTY, R. W. (1957). **Recent developments in our knowledge of the causes and prevention of bloat.**—*Proc. VIIth Int. Grassl. Congr., Palmerston North*, 1956 pp. 262-272. Discussion: pp. 272-273. **846**

The recent literature is reviewed in some detail, 31 references being cited. Previously unpublished results of work by various authors are quoted. It is concluded that bloat is a complex entity and that no single explanation regarding causes or prevention is adequate.

—H. SCOTT MCTAGGART.

JACOBSON, D. R., BROWN, L. D., DOWDEN, D. R., BAKER, F. H. & GRAINGER, R. B. (1957). **Excessive stable froth formation in the reticulo-rumen as the primary cause of legume bloat.**—*J. Dairy Sci.* **40**, 615-616. **847**

Forty-five cases of bloat, associated with the formation of excessive amounts of stable froth, occurred in 2 fistulated and 14 non-fistulated cattle grazing a bloat-producing blue grass–white clover pasture. Penicillin was found to prevent the bloat, but methyl silicone treatments were not completely effective.—E. J. CASTLE.

ASCARELLI, I. (1957). **Note on a case of chick-growth depression caused by a detergent.**—*Emp. J. exp. Agric.* **25**, 301-303. [Author's summary modified.] **848**

It was shown that the addition of a commercial detergent (a mixture of a non-ionic with 10% of an ionic detergent) to chick mashes caused growth depression. Growth depression was also produced by the addition of the detergent to a mash enriched by an antibiotic.

MCDONALD, M. W. (1957). **Methionine supplements in chicken diets. II. A breed difference in growth response to DL-methionine.** —*Aust. J. agric. Res.* **8**, 587-594. [Author's summary copied *verbatim*.] **849**

In four experiments, White Leghorn chickens showed a highly significantly greater response in early growth following addition of DL-methionine to a practical basal diet, than Australorp chickens. Average increases in body weight were: White Leghorns, 10·95%; Australorps, 2·0%. In crosses between these breeds, it was shown that the difference between the breeds can be explained by a single sex-linked

gene or group of genes, dominant in White Leghorns. Possible biochemical bases for the breed difference are discussed.

FIELD, H. I. (1957). **Observations on copper deficiency in cattle in East Anglia.**—*Vet. Rec.* **69,** 788-795 & 832-839. [Author's summary copied *verbatim.*] **850**

An account is given of experiments carried out over a number of years in East Anglia on the prevention and treatment of copper deficiency in cattle. The dosing of pregnant cows with copper was effective in preventing deficiency in the subsequent calf crop. The disease was also prevented in calves by spraying pastures with a solution of copper sulphate. Observations on store cattle from the time they were 12 to 30 months of age showed a striking difference in weight gain between deficient cattle and cattle in which copper levels were maintained around normal. In other experiments, dramatic recovery occurred in deficient cattle following either the intravenous injection of copper sulphate or the feeding of anti-teart cake. Pastures showed a seasonal variation in mineral content, with an inverse relationship between the copper and molybdenum contents, but the copper content was at all times sufficient to meet the needs of the grazing stock, thus supporting the view that copper deficiency in the animal is induced by some factor in the herbage which interferes with copper assimilation.

DICK, A. T. (1957). **The effects of inorganic sulphate on molybdenum and copper metabolism in sheep.**—*Proc. VIIth Int. Grassl. Congr., Palmerston North,* 1956 pp. 368-375. Discussion: pp. 375-376. **851**

If the sulphate intake of sheep was increased while the Mo intake was kept constant, the Mo concentration in the blood fell sharply during the first 24 hours and then levelled out at a new lower value which persisted as long as the diet remained unchanged. The fall in blood Mo was accompanied by a marked rise in the excretion of Mo in the urine.

On the other hand, if high Mo and sulphate intakes were imposed simultaneously, it was found that the higher the sulphate intake, the lower the amount of Mo stored in the tissues and excreted in the urine and the greater the amount excreted in the faeces. It is concluded that sulphate interferes with absorption of Mo from the intestine.

The limitation of the storage of Cu in the liver by Mo was found to be potentiated by sulphate. The sulphur of protein acted as a potentiating source of sulphate when the protein content of the diet was increased beyond 10%.

—H. SCOTT MCTAGGART.

ALLCROFT, R. & LEWIS, G. (1957). **Copper metabolism in sheep and cattle with special reference to foetal liver storage.**—*Proc. VIIth Int. Grassl. Congr., Palmerston North,* 1956 pp. 377-385. Discussion: pp. 385-386. **852**

Small groups of stall fed ewes were fed some on cocksfoot straw and some on kale, each with and without supplements of copper sulphate, sodium molybdate and potassium sulphate alone or in various combinations. Liver Cu and Mo values were ascertained for the ewes at the beginning and end of pregnancy and for the new-born lambs. Statistical analysis of the results gives the following indications.

Inorganic sulphate intake had no effect on liver Cu storage in ewes of low or normal Cu status, but when the Cu status of the ewe was low, foetal liver Cu could be reduced by a high sulphate intake.

In Swaledales much less Cu and Mo was found in foetal liver when ewes were on a diet of kale than when they were fed cocksfoot. Addition of sulphate to cocksfoot appeared to have a limiting effect on foetal liver Cu and Mo values, but the results were not statistically significant. In Dorset Horns there was no apparent difference between foetal liver Mo values in cocksfoot- and kale-fed groups.

A definite inverse relationship was found between the sulphate intake and the blood Mo levels thus agreeing with Dick (1954) [*V.B.* **25,** 171]. [See also preceding abst.]

A daily intake of 10 mg. Cu allowed liver storage of Cu in ewes even though the daily Mo intake was 50 mg.

In spite of some very low liver Cu values in lambs no evidence was found of nervous symptoms nor of demyelination of the c.n.s. In another experiment the Mo intake of groups of barren and in-lamb ewes was doubled every 8 weeks for 11 months. Barren ewes and untreated controls showed a considerable increase in liver Cu. Treated barren ewes showed a marked progressive increase in blood Cu. In lambing ewes the increase in liver Cu was slight and did not occur till after parturition. It appears that the foetal Cu requirement prevents the circulatory increase in the dam.

Pasture samples from various parts of Britain where hypocuprosis does and does not occur in cattle and sheep were examined for Cu, Mo and SO_4 content.

Apart from higher Mo values in Somerset ("teart") samples, comparison of data from

"normal" and "swayback" pastures shows no apparent difference in the concentrations of the three constituents. Swayback is not known to occur on "teart" pastures.

SO_4 values do not appear to influence the occurrence or otherwise of hypocuprosis in cattle. Pastures on which hypocuprosis occurs have usually, but not always, a higher Mo content than "normal" pastures and this is undoubtedly a potent factor in Somerset samples. —H. Scott McTaggart.

Kaldor, I. & Powell, M. (1957). **Studies on intermediary iron metabolism. X. The influence of age and sex on the storage of supplemental dietary iron in the rat.**—*Aust. J. exp. Biol. med. Sci.* **35,** 123-130. [Authors' summary modified.] **853**

Storage iron was measured in the liver and spleen of rats of both sexes and of three age groups, fed a standard diet. Females were found to store considerably more iron than males. This sex difference increased progressively during the early months of life but remained constant in adult rats. Old rats had more storage iron than young ones but the rate of iron deposition was higher in young animals than in old ones. Storage iron was also measured in similar groups of rats which had received a diet supplemented with iron over a period of months. Storage iron was increased in all groups but the amounts stored monthly in excess of the control values did not differ significantly in males and females. The older rats stored a greater excess per month than did the younger animals.

Bolton, W. (1957). **The incidence of head retraction in newly-hatched chicks and the manganese contents of the eggs of some inbred lines of Brown Leghorn fowls.**—*Poult. Sci.* **36,** 732-735. [Author's summary modified.] **854**

The incidence of head retraction in newly hatched chicks and the manganese contents of the eggs of some inbred lines of Brown Leghorn fowls were determined for diets containing 66 and 95 p.p.m. manganese. The various lines differed in their ability to transfer manganese from the food to the egg. Head retraction in the affected flock was not due solely to a deficiency of manganese in the diet fed to the breeding stock.

Grant, A. B. (1957). **The rachitogenic effect of vitamin A.**—*Proc. VIIth Int. Grassl. Congr., Palmerston North,* 1956 pp. 397-402. Discussion: pp. 402-403. **855**

The development of rickets in New Zealand lambs during their first winter while on good quality green feeds was shewn to be attributable to a rachitogenic factor in the green, actively growing leaves of pasture plants. Antirachitic activity was confined to dead leaves in which most of the plant pigments had been destroyed by weathering. By chromatographic fractionation of the fat-soluble constituents of green feed and isolation of the components, the active principle was identified as carotene. Vitamin A had the same rachitogenic effect on rats as had equivalent amounts of carotene.

Rickets was produced in lambs wintered on permanent pasture by giving a supplement of vitamin A representing 5% of the maximum carotene intake from green feed. Control lambs remained normal. Field trials have shown cereal crops to be more rachitogenic than green rye grass pasture. The difference appears to be related to the availability of carotene rather than to the actual amounts present. Recent studies indicate that vitamin A is not the only factor involved.—H. Scott McTaggart.

Bendixen, H. C. (1957). Veterinaere problemer i forbindelse med sygelige tilstande hos unge grise med saerligt henblik på dystrofiske tilstande i svinets naesehule. **[Disease conditions in young pigs—particularly dystrophic conditions of the nasal cavity.]**—*Medlemsbl. danske Dyrlaegeforen.* **40,** 93-118. **856**

B. discussed the role of vitamin A deficiency in anophthalmia and dystrophic conditions of the nasal cavity in piglets and slaughter pigs. About 90% of the incidence of anophthalmia in Denmark occurs in litters born to gilts, mainly from May to October (*i.e.*, gilts served between mid-winter and end of spring). A survey of anophthalmia at one abattoir in 1945 revealed that during a year about 1% of the farmers supplying the abattoir had supplied pigs belonging to such litters. Many affected pigs are weakly from birth and their survival rate is relatively low, and the true incidence of the condition is therefore probably much higher. Apart from malformation of the eyes, affected piglets had characteristic dystrophic lesions of the nasal cavity, turbinate bones and of the respiratory epithelium—these are illustrated, with captions in English. In piglets from weakly litters without anophthalmia there was a noticeable tendency to adhesion and consolidation in the turbinate structures, and signs of resorption of cartilage and bone, together with dystrophic changes in the epithelium, were very common. Inflammatory changes were not seen. The dystrophic condition of the epithelium would prob-

ably predispose the animal to infections and lead to atrophic rhinitis. Dystrophic conditions in the nasal cavity are very common in slaughter pigs in Denmark. During a 21-month period the snouts of all slaughtered pigs from the three experimental stations (Zealand, Funen and Jutland) were studied in the laboratory, with particular attention to grading according to severity of the lesions revealed by the standard cross section at the level of the upper canine tooth. About 20–25% of pigs born in winter or spring were free from lesions; 10–15% doubtful (very slight lesions); 40–50% had pronounced dystrophic conditions of the turbinate bones and nasal septum while 10–20% had severe or very severe dystrophic changes. The corresponding proportions of summer-born pigs in these grades were, respectively: 40–50%, 10–20%, 20–30% and 5–10%. It is pointed out that gilts and young boars are commonly fed the same diet as bacon pigs (in which a porous and weakly developed skeletal system is considered desirable). B. discussed the vitamin A requirements of breeding pigs, pointing out that the recommended minimum values for vitamin A in 1944–1950 were 3–4 times those recommended between 1937 and 1943, and the values for β-carotene 4–5 times as high, and that these values should be increased 50–100% for pregnant and lactating sows.—F.E.W.

Markson, L. M., Carnaghan, R. B. A. & Parr, W. H. (1957). **Studies on encephalomalacia in poultry. II. The tocopherol status of normal and affected chicks.**—*Brit. vet. J.* **113,** 303-307. **857**

No significant difference was found between the levels of tocopherol in the liver and plasma of normal chicks, day-old to 8 weeks of age, and of chicks showing signs of encephalomalacia, aged between 3 and 8 weeks. In the normal chicks the liver tocopherol content declined rapidly from hatching to 2 weeks of age and the plasma content from hatching to 3 weeks of age: both values then remained fairly constant. No encephalomalacia was diagnosed in chicks under 3 weeks of age.—E. J. Castle.

Creech, B. G., Feldman, G. L., Ferguson, T. M., Reid, B. L. & Couch, J. R. (1957). **Exudative diathesis and vitamin E deficiency in turkey poults.**—*J. Nutr.* **62,** 83-95. **858**

Exudative diathesis was produced in 4 weeks in turkey poults by feeding a vitamin E deficient torula yeast diet. Haemorrhages were present on the inner thighs and lower breast muscle. A mild oedema and macrocytic anaemia were noted. α-tocopheryl acetate (20 mg./lb. of feed) prevented all symptoms. Dried brewers' yeast prevented exudative diathesis when included in the maternal diet. No changes in serum proteins were noted using electrophoresis.

Low serum albumin/globulin (A/G) ratios in day-old poults whose dams had practical diets were raised by supplementation of the basal diet with α-tocopheryl acetate, dried brewers' yeast, or both. Birds whose dams had synthetic diets exhibited increased A/G ratios when the basal diet was supplemented with dried brewers' yeast even in the presence of vitamin E. Supplementation of this maternal diet with condensed fish solubles had no effect on A/G ratios of poults from that source.—D. Poynter.

Brown, W. O. & Jackson, N. (1957). **Biochemical changes associated with folic acid deficiency and oestrogen treatment in the oviduct of the immature chick.** — *Nature, Lond.* **179,** 1193-1194. **859**

The weight and dry weight precentage of the oviducts of immature oestrogen treated female chicks fed a folic acid deficient diet was less than that of controls. There was no significant difference in the nucleic acid content of the oviducts on a dry tissue basis but, on a fresh tissue basis and on the content in the total tissue, there appeared to be inhibition of nucleic acid synthesis. In the deficient chicks, the folic acid content of the oviduct was less and there was 60% more phosphatase activity. This supports the view that the oviduct tissue of the folic acid deficient chicks was physiologically less mature than that of the controls, and folic acid was the limiting factor.—A. Ackroyd.

Morgan, T. B. & Yudkin, J. (1957). **The vitamin-sparing action of sorbitol.** — *Nature, Lond.* **180,** 543-545. **860**

In the complete absence of dietary carbohydrate, rats are able to survive without thiamine for many months. As little as 5% or 10% of glucose in the diets leads to signs of thiamine deficiency. This observation has been used to study the metabolism of sorbitol in rats. It was found that rats given up to 20% sorbitol in the carbohydrate-free diet survived for 30 weeks and were still gaining weight in the absence of thiamine. Sorbitol was then added to thiamine-free diets containing sugar, when it gave at least as good growth as when added to carbohydrate-free diets.

It is suggested that sorbitol produces a change in the intestinal flora of the rat so that thiamine is synthesized and is available to the host. Preliminary observations show that rats put on a diet with sorbitol, but with none of the

vitamins of the B group have continued to grow well for more than three months. Thus it seems that sorbitol can lead to the intestinal synthesis of much of, if not all, the required amount of all the vitamins of the B group.—J. A. NICHOLSON.

DAWBARN, M. C., HINE, D. C. & SMITH, J. (1957). **The determination of vitamin B_{12}-activity in the organs and excreta of sheep. IV. The separation of vitamin B_{12}-active factors from rumen contents by paper ionophoresis.** — *Aust. J. exp. Biol. med. Sci.* **35**, 97-102. [Authors' summary modified.] **861**

The vitamin B_{12}-active factors in the rumen contents of sheep were separated by ionophoresis on paper. The distribution of the factors throughout the paper was determined by cutting it into pieces and measuring the vitamin B_{12}-activity in each piece by microbiological assays with *Escherichia coli* mutant, *Lactobacillus leichmannii* or *Ochromonas malhamensis* as test organism.

Rumen contents of sheep grazing on normal pasture were contrasted with those of sheep kept in pens and fed wheat-hay chaff and gluten with supplementary cobalt.

MEIER, H., CLARK, S. T., SCHNELLE, G. B. & WILL, D. H. (1957). **Hypertrophic osteodystrophy associated with disturbance of vitamin C synthesis in dogs.**—*J. Amer. vet. med. Ass.* **130**, 483-491. **862**

Seven cases of hypertrophic osteodystrophy in dogs aged between 4 and 8 months are described. The principal symptom was lameness associated with painful swellings in the metaphyses of the long bones, the costrochondral junctions and occasionally the jaws. A description is given of radiographs of the skeletons and of the P.M. and histological findings in 5 dogs which were destroyed. 13 detailed plates are included. All the animals had low serum vitamin C levels, but this gradually returned to normal in the two which recovered. No obvious clinical improvement resulted from large doses of vitamin C. A list of similar diseases and their differential diagnosis is given.—E. J. CASTLE.

CAPORALE, G. (1957). La prevenzione delle ricadute durante il trattamento del collasso post-partum. [**Prevention of relapses in milk fever.**]—*Vet. ital.* **8**, 285-287. **863**

The conventional methods of treatment are discussed. Dihydrotachysterol mobilizes calcium and maintains its level in the blood long enough to prevent a relapse and is well tolerated. In combination with calcium therapy it is of value in the treatment of milk fever and prevention of a relapse. Alone it is of prophlyactic value in herds where the disease is of common occurrence.—T.E.G.R.

STOTT, G. H. & SMITH, V. R. (1957). **Parturient paresis. VIII. Results of parathyroidectomy of cows.** — *J. Dairy Sci.* **40**, 897-904. [Authors' summary modified.] **864**

Non-lactating pregnant cows and non-pregnant lactating cows were thyroparathyroidectomized. Blood serum calcium and plasma inorganic phosphorus analyses were made at various intervals before and after the operation. A considerable decrease in serum calcium and a slight decrease in inorganic phosphorus occurred after removal of the parathyroid glands. None of the cows exhibited symptoms of milk fever, although the serum calcium of several of the cows decreased to the range where milk fever symptoms occur. The natural diet of ruminants has a high Ca : P ratio and makes it possible for the cow to maintain pregnancy, to calve and to lactate without the parathyroids.

LEFFEL, E. C. & SHAW, J. C. (1957). **Studies on ketosis in dairy cattle. XXI. Effect of different levels of protein and energy intake.** —*J. Dairy Sci.* **40**, 981-988. **865**

28 cows were divided into 3 groups about 60 days before calving, and fed concentrates containing either 23·2, 14·4 or 10·5% crude protein in addition to hay and silage. Food consumption was about 170% of Morrison's total digestible nutrients standard for maintenance. After calving the groups were further divided and about half the animals in each group were given only 35% of Morrison's T.D.N. standard for 10 days, whilst the rest were fed to requirement.

There were no large differences in blood glucose, acetone bodies, liver glycogen or butterfat percentage attributable to the level of protein fed, either before or after calving. The blood glucose was considerably lower and the acetone bodies higher in the underfed animals, but there was no clinical ketosis. Liver glycogen was much reduced in the fasted animals, and only slightly below the pre-partum level in the fully fed animals. Total milk yields were less but butterfat percentages were higher in the underfed animals. —E. J. CASTLE.

MIXNER, J. P. & ROBERTSON, W. G. (1957). **Bromsulphalein fractional clearance in dairy cattle as a criterion of liver function, and the simultaneous determination of volumes of plasma and blood.**—*J. Dairy Sci.* **40**, 914-921. [Authors' summary modified.] **866**

Bromosulphalein was used for the simultaneous determination of liver function, and volumes of plasma and blood in cattle. The dye was eliminated from the blood exponentially, the log of dye concentration being related rectilinearly to the time after administration. The slope of the regression curve ("BSP fractional clearance") expressed the fraction of the total blood plasma volume which was cleared of the dye per min. Since the dye distribution volume is the same as the plasma volume, blood and plasma volumes can also be determined using dye dilution techniques.

The mean bromsulphalein fractional clearance values for nine Holstein bull calves and five lactating Holstein cows were 0·156 and 0·192, respectively. The mean plasma values per kg. body wt. were 68·2 ml. and 38·1 ml. for the bull calves and cows, respectively; and the blood volumes per kg. body wt. were 115 ml. and 57·2 ml.

Robertson, W. G., Mixner, J. P., Bailey, W. W. & Lennon, H. D., Jr. (1957). **Determination of liver function, plasma and blood volumes in ketotic cows, using bromsulphalien.**—*J. Dairy Sci.* **40,** 977-980. [Authors' summary modified.] **867**

Liver function was significantly weaker in cows with ketosis than in 5 normal controls, the bromsulphalein fractional clearance values being 0·089 and 0·192, respectively. These findings are in accordance with the histopathological evidence of liver damage. It was confirmed that plasma protein-bound iodine values were significantly lower in the test cows, 2·53 μg.% as compared to 3·52 μg.% for the controls. The haematocrit values, plasma and blood volumes per kg. body wt. for the controls and test cows, respectively were 35·6 and 37·0%; 38·1 and 47·8 ml.; 57·2 and 73·1; these differences were not statistically significant.

See also abst. **957** (report, Gt. Britain).

DISEASES, GENERAL

Steuer, H. (1957). Choroby słoni (Tlumaczenie z niemieckiego). [**Diseases of elephants.**]—*Méd. vét., Varsovie* **13,** 427-430. **868**

A short account of the most common diseases of elephants. S. discussed cellutitis, suppurative infections of limbs, diseases of teeth and eyes, and the various treatments. The question of anaesthesia is of particular interest owing to a decided individual susceptibility of the elephant to various drugs; oral administration of alcohol and of chloral hydrate *per os* or *per rectum* appears to be quite effective. S. denies the generally accepted idea of the longevity of elephants whose average span of life is 40 years.

—M. Gitter.

Quinlan, J. & Morton, D. D. (1957). **Paralysis of the branches of the nervus vagus—N. recurrens, N. pharyngeus and N. laryngeus cranialis — as an aetiological factor in "whistling" and "roaring" in horses; with some remarks on its heredity and surgical procedures in its treatment.**—*J. S. Afr. vet. med. Ass.* **28,** 63-74. **869**

Results of limited breeding experiments led to the conclusion that paralysis of the pharyngeal and laryngeal branches of the vagus nerve is, to some extent, hereditary in the progeny of affected sires when bred in the nutritional and environmental conditions of the Kimberley district in South Africa. Surgical treatment is briefly reviewed.—T.E.G.R.

I. Rossi, P. (1956-57). Dystrophies musculaires ou myopathies des jeunes veaux. [**Muscular dystrophy or myopathy in calves.**] — *Bull. Soc. Sci. vét. Lyon* **58 & 59,** 251-263. **870**

II. Pierre, M. (1956-57). Contribution des vétérinaires praticiens à l'étude du "syndrome myopathie-dyspnée des veaux de lait". [**Contribution of practitioners to the "myopathy-dyspnoea" syndrome in calves.**]—*Ibid.* 265-269. **871**

III. Flachat, C. (1956-57). Étude des lésions de la myopathie des veaux. [**Lesions of muscular dystrophy in calves.**]—*Ibid.* 271-275. **872**

IV. Ferney, J. (1956-57). Syndrome dyspnéique des veaux de lait en Haute-Loire. [**Dyspnoeic syndrome of unweaned calves in the Haute-Loire.**]—*Ibid.* 275-279. **873**

V. Bertrand, M. (1956-57). Considérations sur la myosite des veaux. [**Myositis in calves.**]—*Ibid.* 281-285. **874**

VI. Joubert, L. (1956-57). Étude microbiologique du syndrome "myopathie-dyspnée" du veau de lait. Premiers résultats. [**Microbiological study of the myopathy-dyspnoea syndrome of unweaned calves.**]—*Ibid.* 287-295. **875**

VII. Cottereau, P. (1956-57). Rappels sur la biochimie de la contraction musculaire. [**Biochemistry of muscular contraction.**] — *Ibid.* 297-301. **876**

VIII. Florio, R. (1956-57). Le syndrome

"myopathie-dyspnée" des veaux de lait : conceptions étiologiques, pathogéniques, prophylactiques et thérapeutiques. **[The myopathy-dyspnoea syndrome of unweaned calves : aetiology, pathogenesis, prophylaxis and treatment.]**—*Ibid.* 303-310. **877**

I. The disease occurs in unweaned calves, aged 3–6 weeks or more, when they are put on pasture; it does not occur in calves born and reared in the field. It affects the skeletal and heart muscles and is characterized by trembling, inability to stand, polypnoea and accelerated arrhythmic pulse, constipation and sweating. There is bilateral swelling of the lumbar, gluteal, crural and scapular groups of muscles. Lesions are confined mainly to striped muscles and the heart; signs of asphyxia, with petechiae and oedema in the lungs and changes in the liver and kidneys are observed. Many treatments have been tried, including vitamin E, with varying results; good results were obtained in a limited number of cases by i/m inj. of a proprietary fish autolysate. For prophylaxis administration of vitamin E to both the cows and the calves is advised. The cause of the condition is obscure but it is considered that the sudden change from indoor to outdoor conditions plays an important part.

II. From replies to a questionnaire it transpires that the disease had been in existence for a number of years in certain areas and flared up in 1955–56. The animals affected were 2–3 months old, practically all born indoors and suckled. The main P.M. finding is degeneration of the muscles of the buttocks and shoulder regions; the meat does not set properly and, on section, it presents a marbled appearance. If the animal is slaughtered early the carcass shows few or no lesions apart from degeneration of the fleshy portion of the diaphragm which is yellowish in colour. Tentative suggestions regarding the aetiology are made.

III. Coloured photographs of the gross lesions were distributed to the members at the meeting and the microcsopic lesions were discussed. The lesion is Zenker's degeneration of single fibres; the individual fibre is not affected in its whole length but only in sections; the fibre membrane does not rupture as in other similar conditions, *e.g.* equine myohaemoglobinaemia, and there is no sarcolysis.

IV. The epidemiology of the syndrome is discussed. Clinically the condition is afebrile and may be acute or subacute, usually sudden in onset but sometimes may be preceded by dullness. Death supervenes in 3–8 hours, occasionally in 1–2 days. Spontaneous recovery occurs in many cases. Gross lesions are emphysema, passive congestion and/or acute oedema of the lungs, whitish streaks of degeneration of the myocardium and, occasionally, pericardial exudate. Lesions may or may not occur in the skeletal muscles. Nutritional imbalance is considered to play an important part in the causation of the disease.

V. The analogies and differences between the syndromes observed by Rossi in the Department of Saône-et-Loire and those observed by Ferney in Haute-Loire are discussed and correlated.

VI. Possible causes of the disease are reviewed.

VII. A general account of the biochemical processes and the role of certain vitamins, myoglobin, cytochrome and cytochrome oxidase in muscular contraction.

VIII. It is considered that the cause of the disease is a deficiency of vitamins (mainly vitamin E) and trace elements in the milk on which the calves are exclusively fed. This leads to low haemoglobin content, accounting for the respiratory symptoms, and low myoglobin content, accounting for the muscle lesions. The sudden change from indoor to outdoor conditions, in the case of calves turned out to grass, and the hyper-phosphataemia, in the case of stabled animals, are precipitating and contributory factors. Prophylactic treatment recommended consists in the administration of trace elements (Fe, Cu and Co) and large doses of vitamin E. In addition, in the case of animals put on pasture, the change should take place gradually. Therapeutic treatment recommended consists in a combination of cytochrome C, vitamins E (in large doses), B_6 and B_{12}, attention to diet and absolute rest and, in cases of dyspnoea, cardiovascular and respiratory stimulants and antiacetylcholine compounds.—T.E.G.R.

FUHRIMANN, H. (1957). Zur Physiologie der Flecknierenbildungen (nephritis fibroplastica) bei Kälbern. **[Physiology of "white-spotted" kidney (fibroplastic nephritis) in calves.]** — *Schweiz. Arch. Tierheilk.* **99**, 208-217. [In German. English, French and Italian summaries.] **878**

Examination of all calves slaughtered at an abattoir during a year revealed that "white-spotted" kidneys occurred in 81 of 2,454. Incidence was slightly higher in summer than in winter, and was highest in calves weighing more than 50 kg. (*i.e.*, more than 5 weeks of age). 80% of calves were of the Simmental breed. The condition was commonest in fat animals and rare in thin ones. F. suggested that it was

caused indirectly by overfeeding, as a result of which bacteria from the overloaded digestive tract entered the blood and reached the kidney. Evolution of the nephritis was divided into 3 stages.—R.M.

ESYUTIN, A. V. (1957). **[Disease caused by feather-grass awns in cattle.]**—*Veterinariya, Moscow* **34,** No. 4. pp. 70-71. [In Russian.] **879**

From 1949 to 1956 the author observed in 41 cattle purulent conditions of the head or interdigital space caused by awns of feather grass (*Stipa pennata*) which had penetrated the skin. The cases occurred during winter housing when hay was being fed. Differential diagnosis of swellings and abscesses was often difficult. [See also *V.B.* **27,** 228.]—R.M.

JELÍNEK, V. (1956). Lymphadenopathia nodularis multiplex hepatis suum (Příspěvek k diferenciální diagnostice ložiskových afekcí v játrech u prasat). **[Differential diagnosis of focal nodular affections in the liver of pigs.]**—*Sborn. čes. Akad. zemědělsk. Věd. Vet. Med.* **29,** 1-10. [In Czech. German and Russian summaries.] **880**

J. discussed lymphoid nodules in the subserous tissue of the liver in pigs, aetiologically, histologically and macroscopically quite distinct from other focal nodular liver affections. The lesions were not confined to the liver but were found also in the lungs, tonsils, spleen, digestive system etc. J. believed that the condition was caused by a specific lymphotropic injurious substance or agent.—E.G.

MARKIEWICZ, K. & STANKIEWICZ, W. (1957). Próby leczenia lobelina psów z alergicznymi chorobami skóry. **[Lobeline treatment of some allergic skin conditions in dogs.]**—*Méd. vét., Varsovie* **13,** 413-415. [In Polish. English and Russian summaries.] **881**

Treatment consited of s/c injections of 5–10 mg. of lobeline 2–3 times daily for 4–7 days. Of 12 dogs affected with acute prurigo, 8 recovered completely; in chronic prurigo there was no response to treatment in 2 cases and slight in 2 others. 7 out of 10 cases of generalized eczema and 3 cases of urticaria were cured. In 5 healthy dogs given lobeline for 3 days, no change was noted in behaviour, temperature, pulse and respiration.—M. GITTER.

DOUGHERTY, E. & RICKARD, C. G. (1957). **An artifact resembling focal necrosis in the livers of slaughtered White Pekin ducks.** — *Avian Diseases* **1,** 130-135. [Authors' summary modified.] **882**

A non-infectious abnormality of the liver in the White Pekin duck in the form of whitish spots on the medial portion of the right lobe is described. This liver damage was not present in ducks which had been hand plucked. Ducks dressed in rotary plucking machines developed the abnormality during the two hours following plucking.

Injections of normal bile into normal livers of freshly killed ducklings produced similar damage. It is concluded that the liver abnormality is an artefact probably induced during machine plucking, which involves rather rough treatment of the carcass. Rupture of the small bile ducts, releasing bile into the parenchyma, is probably responsible.

NEWCOMBE, H. B. (1957). **Magnitude of biological hazard from strontium-90.**—*Science* **126,** 549-551. **883**

The main hazards to human beings in peacetime are: bone tumours (and possibly leucaemias) due to ingestion of strontium-90; shortening of the life span (through malignant disease and acceleration of the aging process) resulting from whole-body irradiation; and hereditary changes induced by radiation in the reproductive tissues. Numerical estimates of the first two hazards are discussed.—T.E.G.R.

GRIFFITHS, D. B. & REES, K. R. (1957). **Human liver metabolism.** — *Brit. med. J.* October 26th, 971-974. [Authors' summary modified.] **884**

An attempt has been made to find out more about what goes on in human liver cells in health and disease. Methods giving valuable insight into cell metabolism in animals are shown to be applicable to pieces of liver removed at operation in man. Oxidations concerned in the final stages of breakdown of sugars and the incorporation of phosphorus (in isotope form) into phosphatides and nucleic acids can be followed in man if experimental techniques are slightly modified. Results suggest that the oxidative and synthetic activity of liver cells may be seriously disturbed when there is obstructive jaundice, liver fibrosis, fatty degeneration, or infiltration of the organ by carcinoma or leucaemia. Such functional disturbances quite likely initiate the gross structural changes in the liver. Anaesthesia used during biopsy does not modify liver cell metabolism.

BÖMER, H. (1957). Experimentelle Untersuchungen zur Funktionsbeeinflussung der Epithelkörperchen. I. Mitteilung. **[Experimental studies on factors influencing the function**

of the parathyroid glands. I.]—*Mh. Tierheilk.* **9,** 97-104. **885**

Daily oral administration of 100–400 g. of phosphates to 3 cows raised the P content of the blood serum without affecting the Ca content, and is therefore considered not to have influenced the parathyroid glands. A dose of 250 or 500 g. of potassium acetate, on the other hand, usually depressed the Ca and raised the P content of the serum.—M.G.G.

See also absts. **957** (mucosal disease in Scotland); **959** (book, veterinary pathology); **960** (book, infectious diseases of domestic animals); **961** (book, veterinary practice).

POISONS AND POISONING

Wright, G. W. & Frank, J. F. (1957). **Ocular lesions in chickens caused by ammonia fumes.**—*Canad. J. comp. Med.* **21,** 225-227. **886**

Bacteriological investigations of a keratoconjunctivitis of chickens failed to disclose any significant micro-organisms. The condition was readily produced by exposing chicks for 15 days or more to an atmosphere with a high content of ammonia fumes.—A. Greig.

Bubień, Z. & Miedzobrodzki, K. (1957). Zatrucia drobiu fosforkiem cynku. [**Zinc phosphate poisoning in birds.**]—*Méd. vét., Varsovie* **13,** 422-425. [In Polish. English and Russian summaries.] **887**

In 1956, The Department of Pharmacology of the Agricultural College in Wroclaw recorded 5,200 deaths from zinc phosphate poisoning in domestic birds. Most of the outbreaks involved large numbers, the birds dying with agonal nervous symptoms within a few hours after the first symptoms (dullness, anorexia, thirst). A characteristic P.M. finding was the garlic-like smell of zinc phosphate in the contents of the crop. The most common cause was wheat treated with zinc phosphate, and most commonly poisoned were hens, ducks, geese, turkeys and pigeons. The poisonings were in most cases malicious, seldom accidental.—M. Gitter.

Bohosiewicz, M. (1957). Przyczynek do laboratoryjnej diagnostyki zatruć solą kuchenną świń. [**Laboratory diagnosis of sodium chloride poisoning.**] — *Méd. vét., Varsovie* **13,** 478-481. [In Polish. English and Russian summaries.] **888**

In studies involving (a) slaughtered pigs, (b) pigs which died from causes other than salt poisoning and (c) pigs suspected to have died from salt poisoning, B. found that the Cl levels in the liver of pigs in group (a) fluctuated between 0·103 and 0·142%; in group (b) from 0·142 to 0·248%, and in group (c) 0·290 to 0·412%. He considers 0·248 as the highest physiological level of Cl in porcine liver and regards any value over 0·250% as suspect. In his opinion the estimation of liver Cl should be carried out in cases of suspected sodium chloride poisoning where the stomach and intestinal contents fail to reveal abnormally high quantities of Cl; he considers the following values as suggestive of salt poisoning: over 0·31% Cl (0·51% NaCl) in the stomach contents, over 0·16% Cl (0·26% NaCl) in the contents of the small intestine and 0·10% Cl (0·165% NaCl) in the contents of the large intestine.—M. Gitter.

Holtenius, P. (1957). **Nitrite poisoning in sheep, with special reference to the detoxification of nitrite in the rumen.**—*Acta agric. scand.* **7,** 114-163. **889**

H. studied the signs and course of poisoning under various feeding conditions after oral administration of potassium nitrate; respiratory exchange and the effects of vasoconstrictor drugs in nitrite poisoning; effect of feed composition on nitrate breakdown in the rumen; effect of pH on the breakdown of nitrate and nitrite in rumen contents; effect of growth-promoting substances on nitrite breakdown; effect of finely-divided plant particles in rumen contents on nitrite breakdown; and the metabolism of nitrate and nitrite in the normally functioning rumen. Symptoms were less severe and detoxication was more rapid in well-fed sheep than in poorly fed. The first signs of illness were due to the vasodilatory action of nitrite rather than to methaemoglobin formation, and good results were obtained by treatment with vasoconstricting drugs.—R.M.

Ohder, H. (1957). Chronische Chlornaphthalinvergiftungen bei Rindern (Hyperkeratose). [**Chronic poisoning in cattle with chlorinated naphthalenes (hyperkeratosis).**] — *Mh. VetMed.* **12,** 128-131. **890**

Further details of hyperkeratosis caused by harness improvised from driving belts. [See also *V.B.* **27,** 2797.]—R.M.

Waibel, P. E., Johnson, E. L., Pomeroy, B. S. & Howard, L. B. (1957). **Toxicity of tetramethylthiuram disulfide for chicks, poults, and goslings.**—*Poult. Sci.* **36,** 697-703. [Authors' summary modified.] **891**

Chicks and goslings were very sensitive to

poisoning by the dietary inclusion of tetramethylthiuram disulphide; chicks developed symptoms at approx. 40 p.p.m. and goslings at a dosage perhaps slightly higher than this amount but definitely under 150 p.p.m. Turkey poults, however, appeared to be more resistant and could apparently tolerate about 200 p.p.m. The symptoms in all three species involved leg deformities and loss of weight. Chicks showed a distinctive type of leg weakness which involved sitting on the hocks, crooked and curled toes, enlarged hocks; some had slipped tendons and some an awkward, splay-footed gait.

Since seed corn treated with "Arasan" contains about 630 p.p.m. of the chemical, it is hazardous to feed such corn to poultry even as a small percentage of the ration.

ROSENBERG, E. E. (1957). **Teratogenic effects of β-amino-propionitrile in the chick embryo.** —*Nature, Lond.* **180,** 706-707. **892**

Chick embryos were injected with 0·05–0·4 ml. β-amino-propionitrile (0·25%, wt./vol. aqueous soln.) at different times up to the 9th day of incubation. Controls were similarly injected with identical volumes of distilled water. Of 26 survivors in the experimental group 21 were malformed, the tibiae being bowed in all and the mandible buckled in 14. Haemothorax was found in one, bowed metatarsus in another, scoliosis of the cervical vertebrae in a third. Oedema of the body wall was the only finding in the one abnormal control. It was only possible to examine a few of the dead embryos. All had malformed beaks and the majority had haemorrhages into the amniotic sac and/or haemorrhages from the chorioallantoic vessels. The same abnormalities were observed when the injection was made on the 4th day of incubation and, in addition, there was agenesis of the anterior thoracic and abdominal walls in 3. Investigations into the histology of the lesions and examination of the internal organs and blood vessels are in progress.—T.E.G.R.

UYS, P. L. & ADELAAR, T. F. (1957). **A new poisonous plant.** [*Pavetta harborii*—Ed. *V.B.*]—*J. S. Afr. vet. med. Ass.* **28,** 5-8. **893**

Heavy periodic mortality among cattle in the North West Transvaal is discussed. The characteristic feature is sudden death, as in *Pachystigma pygmaeum* poisoning ("gousiekte"). Feeding experiments on sheep and cattle led to the conclusion that the shrub *Pavetta harborii* belonging to the same family (Rubiaceae) was responsible. The outstanding P.M. finding was, as in "gousiekte," replacement of the cardiac muscle fibres by scar tissue. —T.E.G.R.

NEWBERNE, P. M. & MCEUEN, G. L. (1957). **Studies on drug toxicity in chicks. IV. The influence of various levels of nitrofurazone on growth and development of chicks.** — *Poult. Sci.* **36,** 739-743. **894**

Nitrofurazone produced symptoms of toxicity in chicks when fed in the dry mash at concentrations of 0·025%or more. Symptoms included polyneuritis and curled toe paralysis. At 0·05% there was a depression in the rate of growth, and histopathological changes were evident. Tissue changes resulting from feeding nitrofurazone are described.

—S. BRIAN KENDALL.

BAKER, R. C., HILL, F. W., VAN TIENHOVEN, A. & BRUCKNER, J. H. (1957). **The effect of nicarbazin on egg production and egg quality.** —*Poult. Sci.* **36,** 718-726. [Authors' summary modified.] **895**

Hens fed nicarbazin laid eggs with blemished yolks, those most severely blemished having the appearance of rotten eggs. When a level of 0·0125% was fed, nearly all the eggs were severely affected; substantial proportions were severely affected with levels of 0·006% and 0·009%. Only a few eggs showed severe blemishes at lower dosage levels. Increased incidence of moderate yolk blemishing was produced by as little as 0·0015% nicarbazin in the ration. Storage for one or two weeks increased the incidence of severe damage in eggs from hens fed 0·006% of the drug; 0·003% appeared to be border-line in this respect, with increased severe damage in Leghorn eggs but not in eggs from heavy breed hens. Egg production rate was noticeably reduced only by relatively high feeding levels of nicarbazin: 0·0125% in the case of Leghorns and 0·009% with heavy breed hens. Egg size was reduced by feeding 0·006% nicarbazin or more. Heavy breed hens fed 0·009% of the drug laid white-shelled eggs. A level of 0·003% had no effect on shell colour, although yolk damage was evident.

POLIN, D. (1957). **Biochemical and weight changes of mottled yolks in eggs from hens fed nicarbazin.** — *Poult. Sci.* **36,** 831-835. [Author's summary modified.] **896**

Eggs with extremely mottled yolk from hens fed nicarbazin had a higher percentage of yolk and a lower percentage of albumen than eggs from hens on a control diet. In extremely

mottled yolks there was a decrease in the solids content and an increase in the water content. Most of the mottling caused by nicarbazin occurs after the egg is laid, and at least 0·005% of nicarbazin in the diet is required to increase the incidence and degree of mottling above that normally found.

DOUGHERTY, E. (1957). **Thiophosphate poisoning in White Pekin ducks.**—*Avian Diseases* **1,** 127-130. [Author's summary modified.] **897**

Thiophosphate (diazinon) poisoning killed 84% of 18,579 ducklings aged 1 to 5 weeks. Diagnosis by lesions or clinical laboratory tests was difficult if not impossible.

The lethal dose for malathion given by mouth was 1·1 g./kg. and for diazinon 14 mg./kg. in White Pekin ducklings. The intratracheal lethal dose was 600 mg./kg. for malathion and 6 mg./kg. for diazinon. Ducklings dusted, sprayed, or reared on litter treated with several times the recommended levels of malathion were not adversely affected. Insecticides considered safe for chickens or other gallinaceous birds may not be safe for ducks.

See also abst. **962** (book, veterinary toxicology).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

BANKS, A. W. (1957). **A nomogram for doses of drugs, particularly phenothiazine.**—*Aust. vet. J.* **33,** 254-255. **898**

Part I of the nomogram may be used for calculating the dose of any drug in grams, given the body wt. and the desired dose rate. It also gives, for phenothiazine, the equivalent dose in fluid ounces of the usual 50% (wt./vol.) suspension.

Part 2, which concerns phenothiazine alone, gives in convenient units the amount of drug and the cost of treating 100 sheep (based on conditions of manufacture and sale of phenothiazine in Australia).—A. G. CULEY.

HANSSON, C.-H. (1957). **Cholinesterases and muscle relaxants. III. Blood cholinesterase activity in relation to tolerance for succinylcholine.**—*Acta pharm. tox., Kbh.* **14,** 6-12. [Author's summary modified.] **899**

A method of measuring tolerance for succinylcholine in unanaesthetized animals is described.

The method was used on horses, cows, pigs and dogs to elucidate the relationship between tolerance for succinylcholine and esterase activities of plasma and r.b.c. Succinylcholine esterase activity in plasma was measurable only in the horse and the pig; these animals were the most resistant to succinylcholine. The activity was, however, very low and is probably of little importance for tolerance to the drug. No positive correlation was found between tolerance for succinylcholine and butyrylcholinesterase activity in plasma in the horse and acetylcholinesterase activity in r.b.c. in one breed of cattle could not be explained. A difference in tolerance to succinylcholine was found between two breeds of cattle.

BULLE, P. H. (1957). **Chlorpromazine and reserpine prevention of myocardial damage by histamine and serotonin.**—*Science* **126,** 24-26. **900**

In the perfused rabbit heart chlorpromazine in doses as low as 0·001 g./ml. prevented infarct formation after intramyocardial injection of serum, serotonin or histamine. The drug was therefore suggested as a possible adjuvant in the prophylaxis of myocardial infarction. Reserpine, at 1 μg./ml., had only a partial effect while at the same time appreciably reducing flow of blood in the coronary artery.

—G. P. MARSHALL.

STOWE, C. M., PALLESEN, D. & HARTMAN, W. (1957). **Studies on the pharmacology of sulfaquinoxaline in dairy cattle.**—*Amer. J. vet. Res.* **18,** 511-518. **901**

The absorption, acetylation, excretion and toxicity of sulphaquinoxaline were studied in a number of calves and cows. After 0·5 g./lb. i/v in cows, adequate concentrations in the blood and plasma were of short duration. Blood levels were low when 1·0 g./lb. was given i/v initially (0·5 g./lb. for calves) and followed by corresponding oral doses at 24-hour intervals. Concentrations in the milk were only a fraction of those in blood and plasma while those in the cerebrospinal fluid in normal calves were only 10–20% of those in plasma. Average acetylation after i/v dosing ranged from 20% at 1 hour to 48% at 9 hours. Excretion through the kidney was rapid. Toxic effects were frequent and serious and included ataxia after i/v, renal precipitation after both oral and i/v dosing, crystalluria (but no haematuria) and interference with blood clotting. It was therefore concluded that sulphaquinoxaline "appears to be a poor

sulphonamide to select for systemic chemotherapy in dairy cattle."—G. P. MARSHALL.

HOLLISTER, C. J., HUEBNER, R. A., BOUCHER, W. B. & DEMOTT, T. (1957). **Parenteral benzathine penicillin V in cattle.**—*Amer. J. vet. Res.* **18,** 584-586. **902**

After i/m administration of 3 megaunits of three salts of penicillin: benzathine penicillin V (1), benzathine penicillin G (2), and procaine penicillin G (3) to normal lactating cows, significant concentrations in the blood were obtained for 96 (1), 144, (2), and 24, (3), hours, respectively while concentrations in the milk were significant and fairly uniform for 48 hours (1), negligible (2), and significant but variable (3). It was suggested that penicillin concentrations in the milk may depend on active participation of the mammary gland, rather than on mere overspill from the blood circulation.

—G. P. MARSHALL.

SHULMAN, A., DICK, M. I. B. & FARRER, K. T. H. (1957). **An investigation of an action of penicillin.**—*Nature, Lond.* **180,** 657-658. **903**

The influence of penicillin on biological processes requiring thiamine was investigated. It was observed that penicillin replaced the thiazole moiety of thiamine as a growth factor for the mould, *Phycomyces blakesleeanus*. In weanling rats on a thiamine-free diet i/p injection of penicillin, alone or with the pyrimidine moiety of thiamine, delayed the onset of thiamine deficiency; it reversed the symptoms of thiamine avitaminosis (caused by withholding penicillin). Administered thrice daily it stopped the convulsions in severe thiamine deficiency and effected a cure in several animals; the ensuing weight gain compared with that following a single dose of thiamine is taken to suggest a conversion of penicillin into thiamine or an analogue in the order of 1%. The possibility that penicillin resistance of *Staphylococcus aureus* may be be associated with a change of thiamine metabolism by the organism is under investigation.

—T.E.G.R.

ANON. (1956). **The adrenocortical steroids in veterinary medicine. An annotated bibliography, June 1956.** pp. 83. Rahway, N.J.: Merck & Co., Inc. **904**

A collection of 374 abstracts on the action and uses of cortisone, hydrocortisone and adrenocorticotrophin in animals. Many of the abstracts are personal communications of case-histories not published elsewhere.—R.M.

CHURCH, L. E. (1957). **Combuthal as an anesthetic for baby chicks.**—*Poult. Sci.* **36,** 788-791. [Author's summary modified.] **905**

The anesthetic action of "Combuthal" (a combination of thiopentone and pentobarbitone) was studied on chicks 1–7 days old. Induction was smooth, and recovery quiet and complete. The intraperitoneal route proved satisfactory and there were no unsatisfactory after-effects. The optimum dose was 0·05 ml. for a day-old chick; in general, an additional 0·01 ml. was needed for each additional day of age.

See also absts. **666** (rimino compounds in TB.); **667** (HeLa cells for study of antituberculous drugs); **668** (treatment of bovine pyelonephritis); **673-674** (fowl cholera); **679** (fowl coryza); **689** (avian salmonellosis); **702** (brucellosis in sheep and goats); **707** (tetanus in horses); **712** (V. fetus infection in bulls); **715** (action of disinfectants on bacteria); **716** (bacterial lysis by penicillin); **740** (chemotherapy of piroplasmosis and theileriosis in the U.S.S.R.); **741** (theileriosis); **787-794** & **897** (parasiticides); **796-797, 803-804, 812, 821, 825-826** &**831-832** (anthelmintics); **894** (toxicity of nitrofurazone); **895-896** (toxicity of nicarbazin).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

DENTON, D. A. (1957). **A gregarious factor in the natural conditioned salivary reflexes of sheep.**—*Nature, Lond.* **179,** 341-34. **906**

Employing plastic surgery, the papilla and terminal 3 cm. of one parotid duct of each of 30 sheep was enfolded in a skin "teat" so that the saliva could be observed dripping from the dependent point. An increase in the rate of parotid secretion occurred when food was shown to a fistulated sheep and, on this same sheep then seeing another sheep feeding, there was a further increase. Hearing other sheep feeding had a similar effect. With increased familiarity with the imposed surroundings, conditioning to the attendants and utensils occurred. Restraint decreased salivary flow.—A. BROWNLEE.

EVANS, C. LOVATT. (1957). **Sweating in relation to sympathetic innervation.**—*Brit. med. Bull.* **13,** 197-201. [Author's summary copied *verbatim*.] **907**

The classical conception of sweating as a cholinergic sympathetic phenomenon, as seen in the eccrine glands of man, cat and pig, needs qualification when the apocrine glands, as in the horse or in the human axilla, are considered. There is no evidence that the apocrine glands are supplied with secretory nerves of any kind. They respond to adrenaline carried in the blood stream. The only influence which the sympathetic system exerts on them is an indirect one effected through changes in the local circulation.

MOON, H. D. & ST. VINCENT, L. (1957). **Effect of somatotropin on cells in tissue culture.**—*Science* **125**, 643-644. **908**

Results of experiments indicate that somatotrophin acts directly on cells, increasing the rate of multiplication and of protein synthesis. —T.E.G.R.

TURNER, C. W., YAMAMOTO, H. & RUPPERT, H. L., JR. (1957). **Endocrine factors influencing the intensity of milk secretion. A. Estrogen, thyroxine and growth hormone.**—*J. Dairy Sci.* **40**, 37-49. **909**

In order to study which endocrine glands limited milk secretion in individual animals during the normal lactational decline, three hormones were given, one after the other, to heifers in which lactation had been artificially induced, and milk secretion had been decreasing for 2 weeks.

The daily feeding of diethylstilboestrol for periods of 4 weeks tended to arrest the decline in all 6 treated animals, and even caused a slight increase in the milk yield of some animals. It is suggested that this hormone acts by preventing the decline of secretion of lactogenic hormone by the pituitary.

The injection of L-thyroxine for periods of 4 to 9 weeks caused a rise in the milk yield of 5 out of 7 heifers, but did not affect the other animals.

The daily injection of growth hormone for one week caused a marked increase in the milk yield of 5 out of 8 heifers and had no effect on the remaining 3.

It is suggested that the individual differences in response have a genetic basis.—E. J. CASTLE.

SHIMIZU, H. (1957). **Biochemical studies on the mammary gland functions. I. The determination of nucleic acids in the mammary glands of rats.**—*Tohoku J. agric. Res.* **7**, 339-345. [Abst. from author's summary.] **910**

Nucleic acid patterns in the developing and functional mammary gland were studied in 120 rats, using the method of analysis described by Schneider. Desoxyribonucleic acid increased gradually during pregnancy, fell abruptly at the last day of pregnancy, and increased again, thereafter remaining fairly constant throughout the lactation period. Ribonucleic acid showed a similar change to that of DNA throughout pregnancy, but showed a further increase during lactation, reaching the maximum at the 21st day, followed by a rapid and steady decline.

SCHMAHLSTIEG, R. (1957). Zur Konstitution des Euters des Rindes. II. Morphologische Merkmale der Zitze beim schwarzbunten Rind. **[Constitution of the bovine udder. II. Morphological characteristics of the teats of Friesian cattle.]**—*Dtsch. tierärztl. Wschr.* **64**, 157-161 & 186-190. **911**

A study of the shape of the teat canal orifice; shape and course of the teat canal; its position in relation to the long axis of the teat; and the arrangement of folds of mucous membrane lining the teat cistern (lactiferous sinus). There are 21 photographs and 6 diagrams. —R.M.

BANGHAM, A. D. (1957). **Distribution of electrophoretically different haemoglobins among cattle breeds of Great Britain.** — *Nature, Lond.* **179**, 467-468. **912**

Two types of adult bovine haemoglobin, designated Bov. *A* and Bov. *B*, were separated by paper electrophoresis. The mobility of Bov. *B* was greater that that of Bov. *A*, which, in turn, was slightly less than human type *A*. From a study of the types of Hb in numbers of matings from one Guernsey and five Jersey herds it was observed that the offspring did not possess a Hb not possessed by the parents, and that each Hb could exist in the presence of the other. The inference is drawn that the different haemoglobins could be controlled by a pair of allelomorphic genes (without dominance or recessivity) readily recognizable in the heterozygote. In stud bulls Bov. *B* was found only in the Jersey, Guernsey and South Devon breeds. These results, it is considered, lead to speculation on the genealogy of these three breeds and the possible association between Bov. *B* gene and the high butter-fat content of the milk of these breeds. —T.E.G.R.

ALLISON, A. C., AP REES, W. & BURN, G. P. (1957). **Genetically-controlled differences in catalase activity of dog erythrocytes.** — *Nature, Lond.* **180**, 649-650. **913**

The fact that r.b.c. of some dogs turned brown in the presence of dialuric acid more rapidly than those of other dogs was investigated. Of 72 dogs examined 26 had brown r.b.c. and their catalase level was below 1·5 m. mol./ml. cells/min. The possibility of heredity in this phenomenon was investigated and blood specimens from 70 offspring of 19 matings were examined and results were classified as high or low according to the catalase levels, above or below 1·5 m. mol./ml. cells/min. Most of the offspring of high × high matings fell into the high group, but 4 did not; there was a preponderance of high offspring among the high×low matings; all the offspring of low×low matings

fell into the low group except one whose catalase activity was 1·6 m. mol./ml. cells/min. These results are considered consistent with a simple mode of inheritance, which is briefly discussed. —T.E.G.R.

PORTER, K. A. (1957). **A sex difference in morphology of neutrophils in the dog.**—*Nature, Lond.* **179,** 784-785. **914**

Blood films from 50 dogs and 50 bitches stained by Wright's method were examined. Characteristic "drumsticks" were observed in a proportion of neutrophiles in films from bitches and were similar to those seen in human blood, each consisting of a well-defined, solid, chromatin nodule about 1·5 μ in diam., joined by a fine chromatin strand to one lobe of the nucleus. On an average they occurred in one out of every 22 neutrophiles. A similar chromatin mass was occasionally found in the nucleus of an eosinophile. True "drumsticks" were not demonstrable in the neutrophiles in films from males.—T.E.G.R.

HALBERG, F., HAMERSTON, O. & BITTNER, J. J. (1957). **Sex difference in eosinophil counts in tail blood of mature B_1 mice.**—*Science* **125,** 73. **915**

Females had lower counts than males. Subsequent studies on the same mice revealed that the average weight and the ascorbic acid content of the adrenal gland were higher in females than in males. It is considered that further study should be devoted to the sex difference in eosinophile count as it may be related to sex differences in the secretory function of the adrenal gland.—T.E.G.R.

VAN LENNEP, E. W. (1957). **The glands of the digestive system in the one-humped camel, *Camelius dromedarius* L. I. The salivary glands.** — *Acta morph. neerl.-scand.* **1,** 286-292. [Author's summary modified.] **916**

An account of the microscopic structure of the salivary glands in adult camels. The parotid gland is a serous gland. Its glandular cells contain a variable amount of mucoids. The ventral buccal gland is well developed and largely a serous gland similiar in structure to the parotid. The submaxillary gland is a mixed gland with muco-serous demilunes. The sublingual gland is small and a purely mucous gland.

I. MASKAR, Ü. (1957). Über den Zwerchfellknochen des Kamels. **[The diaphragmatic bone of the camel.]**—*Acta anat. Basle* **30,** 461-471. [English and French summaries.] **917**

II. PURCHIT, M. S. (1957). Über einen Zwerchfellknochen beim Kamel. **[A diaphragmatic bone in camels.]**—*Dtsch. tierärztl. Wschr.* **64,** 487. **918**

I. A diaphragmatic bone was present in all camels and dromedaries. It consisted of a central body of spongy bone, filled with fatty marrow, surrounded by compact bone. Its function was to protect the foramen of the inferior vena cava from closure during changes in pressure on the diaphragm due to swallowing, ruminating and when the animal stands up.

II. P. briefly described the anatomy of the diaphragmatic bone. There are 2 illustrations. —R.M.

FITZPATRICK, R. J. (1957). **The activity of the uterine cervix in ruminants.**—*Vet. Rec.* **69,** 713-717. **919**

A recording apparatus was used for measuring and recording intra-uterine and intracervical pressure in cows and ewes. Two balloons, 1–2 ml. capacity, were mounted on a 2-channel metal catheter so that the lumen of each communicated with a separate channel of the catheter and was connected by tubing to a recording manometer. The whole system was water-filled and could register pressure changes of 0·5 mm. Hg. The catheter was introduced *per vaginam* and adjusted so that one balloon was placed caudally to the bifurcation of the uterine horns and the other midway along the cervical canal. Spontaneous and drug-induced activity was demonstrated both in the cervix and in the body of the uterus, and qualitative and quantitative differences were recorded. Results obtained and their possible practical applications are discussed.—T.E.G.R.

PSYCHOYOS, A. (1957). Action de la lumière sur la thyroïde du rat. **[Action of light on the thyroid gland of the rat.]**—*C. R. Soc. Biol., Paris* **151,** 306-309. **920**

Rats, kept on the same diet, were divided into groups. The control group was kept under natural conditions during the month of January. The other groups were kept in continuous artificial light or in continuous darkness for 150 hours or 600 hours. There was no difference in food consumption between the various groups but more water was consumed by the rats exposed to artificial light, especially at the beginning of the experiment. After 150 hours' exposure thyroid activity, measured by I^{131}, was slightly increased; the r.b.c./plasma ratio was 0·145 as compared with 0·21 in rats kept in darkness and 0·17 in controls. After 600 hours the r.b.c./plasma ratio was 0·19 in artificial

light and 0·14 in darkness. It appears that artificial light first stimulates the thyroid but prolonged exposure produces fatigue.—T.E.G.R.

STOTT, G. H. & SMITH, V. R. (1957). **Some results of parathyroidectomy of calves.**—*J. Dairy Sci.* **40,** 893-896. [Authors' summary modified.] **921**

This was a study of reactions of calves to removal of the internal parathyroids along with the thyroid glands, removal of the external parathyroids, and thyroparathyroidectomy. When only the internal parathyroids and the thyroid glands or the external parathyroids were removed, there was no tetany and little effect on the serum calcium and plasma inorganic phosphorus. Thyroparathyroidectomy resulted in a sudden decrease in serum calcium, a decrease in inorganic plasma phosphorus, tetany and death. Inorganic plasma phosphorus increased just before death.

SHIMIZU, H., KURETANI, K. & UGAMI, S. (1957). **Biochemical studies on the egg formation in the domestic fowl. I. On the occurrence of phospho-protein and the determination of nucleic acids in liver and serum of laying hens.**—*Tohoku J. agric. Res.* **7,** 331-338. **922**

It was concluded that the phosphoprotein vitellin was formed in the liver. The crude protein content of the blood serum of laying hens was higher than that of cockerels and non-laying hens. Nucleic acids were not detected in the serum of any fowls.—R.M.

See also absts. **963** (handbook of animal physiology); **964** (book, adrenal cortex); **965** (book, anatomy, histology and embryology of farm animals); **966** (book, biochemistry).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

BARNES, E. M. (1957). **New methods in food preservation. I. Antibiotics.**—*Roy. Soc. Hlth J.* **77,** 446-457. Discussion: pp. 466-467. **923**

HANNAN, R. S. (1957). **New methods in food preservation. II. Radiation preservation of foods.**—*Ibid.* 457-465. Discussion: pp. 466-467. **924**

I. The number of countries permitting the use of one or more antibiotics as food preservatives is increasing. The choice of a suitable antibiotic must depend on the type of spoilage to be controlled, on the stability and solubility of the antibiotic at the particular pH of the food, and also the stability to heat and lack of toxicity when taken orally. In the case of raw products, *e.g.* meat, fish, poultry, only the tetracyclines have given reasonable extension of storage life. In the U.S.A. chlortetracycline or oxytetracycline is incorporated into the iced water used for chilling eviscerated poultry carcasses, while to control spoilage in the deep muscular tissue of carcasses the animals have been injected with an antibiotic a few hours before slaughter or the carcass infused at the time of slaughter. The antibiotics nisin and subtilin are being tested for control of spore-forming organisms in canned foods, and nisin is being successfully incorporated in certain types of continental and processed cheeses to protect them against the growth of deleterious clostridia. Many species of salmonella are resistant to low concentration of the tetracyclines, and the use of an antibiotic to prolong the storage life of poultry and meat may alter the spoilage pattern and permit dangerous resistant pathogens to grow unchecked without obvious spoilage. Stress is laid on the inadvisability of permitting the use of antibiotics in poultry slaughtering plants and abattoirs unless there exists a high standard of hygiene and refrigeration facilities up to the time of retail sale.

II. Only a few of the "ionizing radiations" are of practical value for treating food and none of them has sufficient penetration to treat a large bulk of food. The cost is likely to be within the practical range for some food products and to be particularly applicable to dry packaged foods for the control of insect infestation. The relatively high radiation resistance of micro-organisms is stressed and studies of the quality of irradiated meat, poultry and fish have been made; irradiation odours are apparent in some meat at 100,000 rads or less and a dose of two million rads can sterilize a product but gives rise to a discernible odour and flavour. It is considered that future research will include investigations of a combination of irradiation with some other process, and though the irradiation of fruit, vegetables and other foods, including milk, has been investigated, few of the potentialities are clearly defined in terms which will yet indicate their commercial application. Salmonella species present in imported frozen whole egg have however, been inactivated without the need for thawing. There is no indication that irradiation produces highly toxic substances which would be harmful to the occasional consumer, but absence of long-term toxicity, particularly carcinogenicity, is much less readily demonstrable.—H. THORNTON.

MELDRUM, G. K., BIGNELL, J. T. & ROWLEY, I. (1957). **The use of sodium fluoroacetate**

(compound 1080) for the control of the rabbit in Tasmania.—*Aust. vet. J.* **33,** 186-196. **925**

A field investigation was made of sodium fluoroacetate (Compound 1080) as rabbit poison. The paper reviews the properties and pharmacology of 1080, and the organization of its distribution and application in Tasmania. The minimum lethal dose of commercial 1080 for rabbits was 0·7 mg./kg. body wt. Secondary poisoning of dogs is a risk, but there is no real hazard for human beings except when handling the pure compound. Field experiment showed that 70% kill was possible even when adequate feed was available. The majority of the survivors were aged 5 weeks or less. Only 9 rabbits survived when a population of 203 (nearly all mature) were poisoned.—R. I. Sommerville.

Binns, H. R. (1957). **The East African Veterinary Research Organization. Its development, objects and scientific activities.** 30 pp. Nairobi: E.A.V.R.O. **926**

An illustrated description of the laboratories at Muguga and the work of the Organization. —R.M.

See also abstr. **654** (destruction of anthrax bacilli in tannery waste); **661** (beef from cattle with localized TB.); **715** (action of disinfectants on bacteria); **755** (W.H.O. report on rabies); **781** (pasteurization of milk containing Q fever); **800-802** (echinococcosis); **967** (text-book, meat inspection); **968** (text-book, food inspection); **969** (book, microscopy of meat and meat products).

REPRODUCTION AND REPRODUCTIVE DISORDERS

van Rensburg, S. W. J. & de Vos, W. H. (1957). **A convenient type of electro-ejaculator for bulls and rams.**—*J. S. Afr. vet. med. Ass.* **28,** 1-3. **927**

A small 6 volt generator is fixed to a wheel which can be rotated, one lead being attached to the generator and the other earthed. The electrodes for bulls are two copper rings inserted with the gloved hand into the rectum and pressed down directly over the ampullae. For rams they are a copper cap at the end of a 10 inch ebonite tube of $\frac{1}{4}$ inch diam. and a copper ring embedded in the wall of the tube about 1 inch behind the cap; the tube is introduced into the rectum for about half its length and is pressed down over the vesiculae seminales and ampullae. Current is supplied intermittently by turning the wheel very slowly for about 3 sec. and stopping for 1–2 sec., repeating the process until the animal ejaculates. In the case of the bull the first secretion is watery and is to be discarded. It is generally followed immediately by normal semen. The ram very often yields the full ejaculate straight away. Attention is drawn to the possibility that this method of stimulation may influence the chromosomes, giving rise to undesirable mutations. The use of an artificial vagina is advocated when circumstances permit. —T.E.G.R.

Sherman, J. K. (1957). **Freezing and freeze-drying of bull spermatozoa.** — *Amer. J. Physiol.* **190,** 281-286. [Author's summary modified.] **928**

The possible dependence of survival upon the time spermatozoa are in contact with the protective substance glycerol, before exposure to low temperatures, was investigated. Pre-treatment for 5 min. provided at least as much protection as 18 hours. Microscopic observations on ice formation relative to survival in semen frozen by four different methods, in the presence and absence of glycerol, gave no evidence for the notion that physical injury by ice is the cause of death on freezing and thawing. Site and character of ice formed were preserved by freeze-drying. A study on the effect of rates of cooling on survival revealed that the theory of survival based upon vitrification by rapid cooling does not apply to bull spermatozoa. Spermatozoa in smears of semen on glass slides did not withstand the process of freeze-drying for various periods. Death was attributed to drying and/or reconstitution.

White, I. G. (1957). **Studies relating to the storage of mammalian spermatozoa.**—*Proc. Soc. Stud. Fertil.* **8,** 36-41. **929**

This is a review of literature concentrating on the work of Blackshaw and Emmens largely from the aspect of metal ion significance, antibiosis and deep freeze, as supplemented by White. Egg yolk–citrate is considered a satisfactory diluent; the use of milk preparations is not discussed. Glycerol is metabolized by spermatozoa under aerobic conditions and a phosphoryl choline derivative occurs in ram spermatozoa.—F. L. M. Dawson.

Blackshaw, A. W., Salisbury, G. W. & Van Demark, N. L. (1957). **Factors influencing metabolic activity of bull spermatozoa. I. 37, 21, and 5°C.**—*J. Dairy Sci.* **40,** 1093-1098. **930**

Blackshaw, A. W. & Salisbury, G. W. (1957). **Factors influencing metabolic activity of bull**

spermatozoa. II. Cold-shock and its prevention.—*Ibid.* 1099-1106. [Authors' summaries modified.] **931**

I. The fructose utilization, lactic acid accumulation, and oxygen consumption of unwashed bull spermatozoa diluted with 0·9% NaCl or phosphate diluents were determined at 37°, 21°, and 5°C. The rate of aerobic fructolysis decreased more in the temperature range of 37° to 21°C. than it did from 21° to 5°C.; whereas oxygen consumption appeared to fall more rapidly in the lower temp. range. The marked differences shown by the 0·9% NaCl and the phosphate diluent at 37°C. were not observed at either 21° or 5°C. Temperature coefficients for spermatozoa aerobic metabolic activity are presented.

II. Rapid cooling of diluted bull semen from 25° to near 0°C. (cold-shock) reduced motility, respiratory activity, and glycolysis. The motility and metabolic damage caused by rapid cooling could be partially prevented by lecithin and almost completely so by egg yolk. The egg yolk also stimulated the glycolysis of unshocked semen. Cold-shock of whole semen caused a loss of potassium and ether alcohol-extractable phosphorus from the cells into the plasma, and an uptake of sodium and calcium by the cells.

ROWELL, J. G. & COOPER, D. M. (1957). **The relation between fertility in the fowl and the dilution rate of the semen using a glycine diluent.** — *Poult. Sci.* **36**, 706-712. [Authors' summary modified.] **932**

Cock semen was diluted with glycine in distilled water at dilution rates 1:1, 1:1·5, 1:2·25 and 1:3·38. Thirty-six hens were inseminated with semen of each dilution, and 36 controls with undiluted semen. Within the range 1:1 to 1:3·38, fertility decreased as the rate of dilution of the semen increased. The rate of decrease was the same for all collections. Fertility of semen diluted 1:1 was practically the same as that of undiluted semen. The results of this and previous experiments suggest that the principal cause of decreasing fertility with increasing dilution rate is the decreasing number of live spermatozoa inseminated. Only small increases in fertility can be expected if more than 170 million live spermatozoa are inseminated.

HARRISON, G. A. & HARRIS, R. (1957). **Thermoregulation of the testis at high temperatures.** —*Proc. Soc. Stud. Fertil.* **8**, 76-81. **933**

Rats killed by exposure for 40–60 hours to higher than body temperatures showed no testicular pathology. Nevertheless the role of the scrotum in regulating the temp. of the testis is stressed. The authors remarked upon the absence of sweat glands from the rat scrotum. Encasing the scrotum (*e.g.* with collodion) in rats failed to produce damage, but this may have been due to interference with the casing by the animals. The relevant Swedish experiments on similar treatment of the scrotum of bulls are not discussed.—F. L. M. DAWSON.

NICANDER, L. (1957). **A histochemical study on glycogen in the testes of domestic and laboratory animals, with special reference to variations during the spermatogenetic cycle.** — *Acta morph. neerl.-scand.* **1**, 233-240. [Author's summary modified.] **934**

Glycogen was demonstrable in the testicles of stallions, bulls, rams, dogs, cats, rabbits, g.pigs, rats and mice. It was generally present both in the seminiferous epithelium and in the intertubular areas. Mice had no glycogen in the tubules, and rats very little.

Most of the glycogen in the tubules was in the Sertoli cells, except in bulls, cats, and rats. It generally showed striking quantitative variations during the spermatogenic cycles, except in bulls, with the highest concentration in early stages, and the lowest late in the cycle. In stallions and cats, however, the conditions were essentially reversed.

The interstitial cells contained some glycogen, as a rule, and were strongly stained in cats.

The epithelium of the rete testis was rich in glycogen in stallions, bulls and rabbits.

The media of arteries generally contained glycogen granules, even in freeze dried material, where all the remaining glycogen was apparently diffusely distributed in the cytoplasm.

RADFORD, H. M. & WATSON, R. H. (1957). **Influence of rams on ovarian activity and oestrus in Merino ewes in the spring and early summer.**—*Aust. J. agric. Res.* **8**, 460-470. **935**

The occurrence of oestrus was studied in 133 old Merino ewes following the introduction of vasectomized rams at three times during the spring (on October 26th, November 18th or December 8th). There were also control groups: one without rams, and one with which vasectomized rams had been running continuously. In some groups regular examination of the vaginal contents was also carried out. Except in a few instances oestrus did not appear until early December. In the groups into which rams were introduced on October 26th or November 18th, the first oestrous period occurred about a week earlier than in the group begun on December

8th and the group that were associated with rams continuously.

In at least 80% of the ewes in which both behavioural oestrus and the vaginal changes were studied, oestrus was accompanied by massive desquamation of the vaginal epithelium.

In the group into which rams were introduced on 8th December inspection of the ovaries revealed, in most instances, the presence of corpora lutea that were judged to have resulted from ovulation shortly after December 8th. The ewes kept separate from rams were similarly studied, but in only 5 out of 20 ewes were similar corpora lutea found.—A. W. Braden.

Bertrand, M. & Ferney, J. (1957). Les possibilités du diagnostic expérimental de la gestation chez la vache. [**Pregnancy diagnosis in cattle.**]—*Cah. Méd. vét.* **26,** 33-53. **936**

The diagnosis of pregnancy in the cow should, it is stated, be early, specific and economical. The various diagnostic tests are discussed. None of these fulfils all three requirements. However, studies on the cytology of the urogenital system, the properties of the cervical mucus, and the changes in the cytology of the cervix and vagina would appear to hold much promise. The individual margin of error in each of these fields could be reduced by combining them into one operation from which a reliable diagnostic test could be evolved.—T.E.G.R.

Jackson, D. & Robson, J. M. (1957). **The action of furazolidone on pregnancy.**—*J. Endocrin.* **15,** 355-359. [Authors' summary copied *verbatim.*] **937**

Furazolidone (0·75 g/kg) will interrupt pregnancy in mice. Foetal tissue is particularly sensitive to the drug at the time of or before implantation of the ovum. Intra-amniotic injection of furazolidone in rabbits causes foetal death and resorption. Furazolidone applied locally does not antagonize the proliferative effect of progesterone on rabbit endometrium. The mode of action of furazolidone on pregnancy is discussed. It is suggested that it acts directly on the foetus.

Mixner, J. P., Saunders, H. L., Jr. & Johnston, J. E. (1957). **Study of some chromogens in cow urine.**—*J. Dairy Sci.* **40,** 67-74. **938**

Three colour reactions (Zimmerman; Pincus; Allen) used in determining 17-ketosteroids in urine were tried on urine extracts of pregnant and non-pregnant lactating cows. It was found that the chromogenic materials in cow urine extracts are mainly ionone derivatives of carotenoids of dietary origin. Measurements of 17-ketosteroids in cow urine have been confounded by presence of these non-steroidal chromogenic compounds.—N. Saba.

Cole, H. H., Hamburger, C. & Neimann-Sørensen, A. (1957). **Studies on antigonadotrophins with emphasis on their formation in cattle.**—*Acta endocr., Copenhagen* **26,** 286-298. [Authors' summary modified.] **939**

14 cattle were injected with pregnant mare's serum (PMS) to determine the effect of dosage and frequency of injection on production of antigonadotrophins. Daily injections were more effective than weekly injections with a total of 10,000 i.u. given weekly. The injection of 1,500 i.u. weekly or 3,000 i.u. every third week resulted in very little antihormone formation and it is concluded that antihormone formation is not a serious factor in the clinical use of PMS in cattle if minimal physiological doses are employed.

As with serological antibodies, a second series of injections following a 2-month pause resulted in a more rapid and greater formation of antigonadotrophins than did the first series. In cattle sera containing sufficient antigonadotrophin to make possible the complete inhibition of 15 i.u. of PMS by as little as 0·1 ml. of serum, no precipitating antibodies were demonstrable by the ring test, whereas less potent antigonadotrophic rabbit sera did give precipitation.

Progonadotrophic activity was readily demonstrable against pituitary gonadotrophic extracts whereas only suggestive evidence against PMS was obtained. The suggestion is made that antigonadotrophins in weak dilution may delay the excretion of pituitary gonadotrophins, thereby increasing their effectiveness.

Fowler, R. E. & Edwards, R. G. (1957). **Induction of superovulation and pregnancy in mature mice by gonadotrophins.** — *J. Endocrin.* **15,** 374-384. [Authors' summary modified.] **940**

The injection of 1 i.u. pregnant mares' serum (PMS) followed after 40 hours by 2 i.u. human chorionic gonadotrophin (HCG), or of 3 i.u. PMS followed by 3 i.u. HCG into mature female mice selected at random with regard to their oestrous cycle induces oestrus and mating in about 75%, and ovulation in 99%. The induction of superovulation depended on the amount of PMS injected and on the strain of mice used. Two types of egg were ovulated, one normal and with a cumulus, the other degenerated and without cumulus. 93% of the

normal eggs were fertilized and 98% of the pronucleate eggs had two pronuclei. About three-qaurters of the females which mated in response to the injected gonadotrophins became pregnant, although this number was less than the number becoming pregnant after mating during natural oestrus. Many of the treated females carried their embryos to term and some gave birth to large litters, although resorptions, irregular distribution of embryos in the uterus, and difficulty during parturition occurred in some females. Mean litter size of the treated females was similar to that found after natural mating. After more than one treatment with gonadotrophins, fewer females mated, ovulated, and became pregnant than after the first treatment. This reduction in response may have been due to the greater age of the females or to their decreased sensitivity to the hormones.

MOORE, N. W. & ROBINSON, T. J. (1957). **The behavioural and vaginal response of the spayed ewe to oestrogen injected at various times relative to the injection of progesterone.** —*J. Endocrin.* **15,** 360-365. [Authors' summary modified.] **941**

Three trials, each using 72 ovariectomized ewes, were conducted to determine the interaction on the behavioural and vaginal response of varying the time of injection of oestradiol benzoate (ODB; dose levels 16, 20 and 25 μg. in oil) relative to that of progesterone (6 injections each of 6 mg. in oil, spread over 3 days). When ODB was injected before or during the period of progesterone treatment no ewe was served, and the vaginal response was partially suppressed. Maximal behavioural responses were observed when ODB was injected 24–48 hours after the final injection of progesterone. Responses decreased as this interval increased. Maximal vaginal responses were observed when ODB was injected 48 hours or more after the final injection of progesterone. Vaginal sensitivity did not decline with increase in this interval.

For assay purposes using both criteria, it is necessary to inject oestrogen 48 hours after cessation of progesterone treatment in order to obtain a maximal response.

COCHRANE, R. L. & MEYER, R. K. (1957). **Delayed nidation in the rat induced by progesterone.**—*Proc. Soc. exp. Biol., N.Y.,* **96,** 155-159. [Authors' summary modified.] **942**

Nidation of embryos was delayed from 1 to 45 days in rats ovariectomized on the 3rd day after mating, by s/c inj. of 4 mg. progesterone daily. Implantation was delayed until such time as 1 μg. of oestrone was given daily in addition to the progesterone. Recovery of blastocysts from one horn of the uterus during progesterone treatment and subsequent implantation of the embryos in the other horn induced by the progesterone–oestrogen indicated that the embryos are maintained in the uterus in a viable, but resting condition during progesterone treatment. If rats were ovariectomized on the 3rd day and untreated for 8 days, nidation of embryos was not observed when progesterone plus oestrogen was initiated on the 9th day and given for the next 5 to 12 days. Rats ovariectomized on the 4th day after mating varied in their response to 4 mg. of progesterone: some exhibited delay, while in others implantation occurred at the normal time. Delayed nidation up to at least 3 days was obtained in hypophysectomized rats injected daily with only 4 mg. progesterone.

HURST, R. O., KUKSIS, A. & BENDELL, J. F. (1957). **The separation of oestrogens from avian droppings.** — *Canad. J. Biochem. Physiol.* **35,** 637-640. **943**

From chromatographic evidence and colour tests it was concluded that oestriol and oestrone are present in the droppings of male and female domestic fowls. Androgens were not demonstrable. An unknown component was recovered from the droppings of the cock.—A. GREIG.

SPÖRRI, H. & ODERMATT, J. (1957). Untersuchungen über die Wirksamkeit von gonadotropen und östrogenen Wirkstoffen sowie von Vitamin E bei der Anöstrie des Schweines. **[Efficacy of gonadotrophic and oestrogenic substances and of vitamin E on anoestrus in pigs.]**—*Schweiz. Arch. Tierheilk.* **99,** 32-38. [English, French and Italian summaries.] **944**

For the treatment of anoestrus in sows the best results (conception rate of 90%) were obtained by s/c or i/v inj. of a mixture of serum gonadotrophin and chorionic gonadotrophin, 800 i.u. of each in 5 ml. water. Treatment with oestrogens was followed by a conception rate of 30%; with vitamin E the rate was only 12%.—R.M.

WERTHESSEN, N. T., MARDEN, W., HAAG, F. & GOLDZIEHER, J. W. (1957). **The influence of seminal fluid on fertility.**—*Proc. Soc. Stud. Fertil.* **8,** 42-52. **945**

Starting from the observation that horse semen samples of apparently normal spermatozoa content are often infertile, it was found from study of some 1,300 individual matings,

that the capacity of the seminal fluid to main motility of spermatozoa varied widely, and was inversely proportional to the non-protein sulphydryl concentration; this capacity correlated well with actual foaling percentages. Werthessen points out that the important tail-end semen sample, as collected in the course of controlled service as permitted in Kentucky, varies rather consistently in composition by contrast with the tail-end sample of British practice, which allows more complete ejaculation.—F. L. M. Dawson.

Deane, W. H. & Nayudu, C. S. (1957). **The effects of endocrinal activity on body temperature, vaginal and cervical secretions, and their application in the diagnosis of fertility/sterility in buffaloes.**—*Indian vet. J.* **34,** 310-315. **946**

In stained films of cervical mucus the authors observed a fern-like pattern, which was well defined during the week ending in ovulation, gradually became less defined and disappeared as the luteal phase advanced, and reappeared with the approach of the next follicular phase. Throughout pregnancy, and in the presence of persistent corpus luteum, the cervical mucus appeared in the form of parallel bands of collagen-like fibres. The vaginal temperature rose during the follicular phase.
—R. N. Mohan.

Henricson, B. (1956). **Genetical and statistical investigations into so-called cystic ovaries in cattle.**—*Thesis, Stockholm.* pp. 93. [Summary published in *Proc. IIIrd. Int. Congr. Anim. Reprod.*, Cambridge 1956. Sect. II, pp. 49-51.] **947**

The aetiology and pathogenesis of cystic ovaries are discussed. According to one school of thought the condition is secondary to uterine infection. Another theory, which is here upheld, is that a disturbed balance between follicle-stimulating hormone and luteinizing hormone prevents ovulation, giving rise to follicular or luteinic cysts. This is by many connected with genetic factors. During 1944–54, records of 5,346 cows in 82 controlled herds were studied. The average frequency of the disease was 0·189 at an average age of 4·49 years. The risk of disease increased from 0·004 in heifers to 0·08–0·1 at 4–5 years after which it remained practically unchanged; cumulative risk was 0·58 at 11–12 years. The difference in frequency of the disease in groups of daughters of normal and of defective dams is considered to lend support to the theory of heredity. Significant heterogeneity was observed between groups of daughters of individual bulls. It is stated that milk production is higher in affected than in normal cows.
—T.E.G.R.

Erb, R. E. & Morrison, R. A. (1957). **Effect of mummified fetuses on the prolificacy of Holsteins.**—*J. Dairy Sci.* **40,** 1030-1035. [Authors' summary modified.] **948**

Over a 30-year period in a closely observed breeding herd, 29 of 2,607 cows produced 32 mummified foetuses. The range in gestation was 131 to 342 days (mean = 215 days). Cows having mummified foetus were considerably above herd average in number of reproductive periods and in average age at disposal. Heritability on an additively genetic basis was estimated at 16% when service sire was assumed not to be a factor. When bulls postulated as heterozygous were mated to daughters of other heterozygous bulls (1,008 cases) mummified foetuses resulted in 0·6% of the cases. Mummified foetus is not therefore transmitted as a single lethal recessive in a simple mendelian manner.

Thoonen, J. & Hoorens, J. (1957). Haarloosheid bij biggen. **[Hairlessness in piglets.]**—*Vlaam. diergeneesk. Tijdschr.* **26,** 106-115. [In Flemish. English, French and German summaries.] **949**

A litter of piglets was born apparently hairless and all except one died within a week. Examination revealed myxoedema, hypoplasia of the thyroid gland, and hypoplasia of the hair follicles. The surviving piglet was treated with iodine and it rapidly became normal.—R.M.

Schales, O. (1957). **Heredity patterns in dysplasia of the hip.**—*N. Amer. Vet.* **38,** 152-155. **950**

The condition was studied in 84 litters of puppies, in the majority of which there was a history of hip dysplasia in, at least, one parent. It is considered that the disease is transmitted as a dominant character, as in man but with more regular manifestation.—T.E.G.R.

Innes, J. R. M. & O'Steen, W. K. (1957). **Splayleg in rabbits. An inherited disease analogous to joint dysplasia in children and dogs.**—*Lab. Invest.* **6,** 171-186. [Authors' summary modified.] **951**

The authors defined a condition, commonly called "splayleg", in rabbits born from normal parents. Affected and normal animals occur in a litter in a ratio of about 3:1. The disease is first recognizable when the rabbits should normally start to walk. There may be

complete immobilization due to a malalignment of one, or both, hip joints, sometimes also of one or both shoulder joints. Postural contractures of the limbs develop later and the animals may be stunted in growth but can be kept alive with care. The authors classified the joint lesions under congenital dysplasia as referred to in orthopaedic pathology. The head of the femur (and/or humerus) is flattened, the neck is incorrectly angulated, and there is a corresponding shallowness of the acetabulum (or glenoid fossa of the scapula). Subluxation and dislocation, with production of a false joint, and chronic lesions of traumatic osteoarthritis, are late sequelae. The disease is inherited, but the cause is unknown. The condition is regarded as a variant of achondroplasia (chondrodystrophia fetalis), restricted in its pathological effect to the hip and shoulder, which in its severe lethal form has occurred in rabbits, as well as in calves, dogs, and man. An experimental approach to those conditions is possible.

GRÜNEBERG, H. (1957). **Genes in mammalian development.** pp. 17. London: H. K. Lewis. 2s. 6d. **952**

This is an inaugural lecture delivered at University College, London, on the 12th November 1956. Particular attention was paid to mutations in mice.—R.M.

See also absts. **691-701** (brucellosis); **712** (vibriosis); **726** (Trypanosoma theileri in the stomach of an aborted foetus); **919** (activity of the cervix in ruminants); **970** (book, fertility).

ZOOTECHNY

MOULE, G. R. (1956). **Some problems of sheep husbandry in tropical Australia.**—*Aust. vet. J.* **32,** 289-298. **953**

This paper reviews the available literature and includes many previously unpublished observations made by the author in semi-arid tropical Queensland. M. discusses the factors influencing the distribution of sheep, pasture growth, productivity and reproduction of sheep, the physiological effects of high atmospheric temperatures and periodicity of light on sheep under tropical conditions. Limitations on sheep due to such environmental influences as soil, rainfall, drought, protein deficiency in dry pastures, and copper, cobalt and vitamin A deficiencies are also reviewed. M. considers that increased productivity of sheep can best be approached through better feeding and breeding and studies in the physiology of adaptation. Each of these topics is discussed. At present supplemental feeding seems necessary to provide sufficient basic amino-acids. Fleece measurement is recommended as an aid to selection.

Merino sheep in tropical Australia are usually lighter and leaner than Merino sheep of the same strain in temperate Australia. Their fleeces usually have shorter staple length and finer fibres, and average fleece cuts per head are lower. Merinos of the South Australian strain cut more greasy wool than the Peppin strain.

At temperatures of about 95° to 100° F. rams have difficulty in serving, and the conception rate of ewes is decreased. The Peppin strain of Merino has higher conception rates and better lambing performance than the South Australian strain.—A. G. CULEY.

LETROTEUR, R. (1957). Rendements comparés en muscles consommables, os, graisse, aponévroses après transformation classique (coupe de Paris) d'une demi-carcasse de N'Dama et de Zébu. **[Dressed weight of carcasses of N'Dama and zebu cattle.]**—*Rev. Élev.* **10,** 41-44. [English and Spanish summaries.] **954**

The weights of an N'Dama and of a zebu carcass were 134 kg. and 158 kg. respectively. The percentage yield was: meat, 70·2 and 68·34; bones, 18·8 and 18·76; fat, 4·1 and 6·8; gristle (aponeuroses), 6·9 and 6·1.—T.E.G.R.

See also abst. **971** (book, breeding and improvement of farm animals).

TECHNIQUE AND APPARATUS

PEARCE, K. A. (1957). **A route for intravenous injection in the Albino rat.**—*Nature, Lond.* **180,** 709. **955**

The lateral marginal vein which runs on the posterior surface of the hind leg is considered more satisfactory than either the tail vein or the small saphenous vein; anaesthesia is not necessary.—T.E.G.R.

DIXON, A. D. (1957). **Differentiation of somatic and autonomic nerve fibres in tissue sections.**—*Nature, Lond.* **180,** 709-710. **956**

The technique employed is a modification of a method first described by Champy. A block of fresh tissue was immersed in a mixture of osmium tetroxide and sodium iodide for 24 hours. It was then washed well in running tap

water and stored for several days in 10% neutral formalin before preparing frozen sections. The additional fixation and the use of frozen sections are considered to limit the diffusion of the contents of fat cells, which are heavily stained by the osmic acid. During mounting the period in xylol is reduced to a minimum. Although some diffusion may persist, the clarity of detail for microscopy or photography is not affected. Over-staining can be reduced by alternate immersion in 0·25% potassium permanganate soln. and Pal's fluid.

—T.E.G.R.

See also absts. **660** (Middlebrook-Dubos test in bovine mammary TB.); **694** (isolation of brucella from milk); **729** (staining technique for identification of trypanosomes); **771** (Ouchterlony's method for study of fibromatosis and myxomatosis); **936** (pregnancy diagnosis in cattle).

REPORT

GREAT BRITAIN. (1956). **The West of Scotland Agricultural College. Report on the work of the College for the year ended 30th September 1956.** pp. 76. Stirling: Jamieson & Munroe, Ltd. [Items of veterinary interest pp. 50-56.] **957**

Outbreaks of so-called MUCOSAL DISEASE of cattle occurred on 38 farms in the south-west and on one farm in Argyll. 25% of the cattle on the farms were affected and the mortality rate was 8·5%. The infected animals were from 9–24 months of age. P.M. findings included ulcers in all parts of the buccal cavity and the oesophagus. The rumen wall was thickened and the epithelium stripped easily. There was oedematous thickening of the wall of the abomasum. In the small intestine the general appearance was that of chronic enteritis. The interdigital spaces were inflamed and in some cases ulcerated. Most of the cases had liver fluke infection and extensive infestation of the abomasum and intestine with *Ostertagia ostertagi*, *Trichostrongylus axei* in the abomasum and *Cooperia oncophora* in the small intestine. All treatments tried failed to relieve the condition.

Studies on treatment of BOVINE MASTITIS with terramycin, aureomycin and chloramphenicol are in progress.

ACHONDROPLASIA was found in 6 of 40 Aberdeen Angus calves. An hereditary factor is thought to be the cause.

POISONING cases were due to lead (in one case through eating lead-covered electric cable) and arsenic (contamination of water by sheep dip). Water dropwort (*Oenanthe crocata*) poisoning was confirmed in 3 animals of 19 grazed on an island.

HYPOMAGNESAEMIA occurred in cattle and sheep. "LEADHILLS LAMENESS" of sheep is being investigated jointly with the Moredun Institute. The condition is first noted in lambs, three weeks old, which become weaker and unable to follow the ewe and die from starvation. The lesions include posterior paralysis, thin frontal bones, distorted vertebrae causing pressure on the spinal cord. Lead is present in the soil, the water and the pasture.

Other conditions of sheep being studied are BRITTLE HORNS; BROKEN MOUTH; SWAYBACK; LAMB DYSENTERY; JOHNE'S DISEASE; ABORTION associated with pneumonia caused by pasteurella; PULPY KIDNEY; JOINT-ILL; TICK PYAEMIA; PREGNANCY TOXAEMIA; BENT LEG; FOOT ROT; YELLOWS.

VIRUS PNEUMONIA occurred in 18 of 23 pigs examined; in 12 of these cases the lesions were marginal. There were only two cases of SWINE FEVER.

BIG LIVER DISEASE occurred in the litter of a Landrace sow; the livers were twice the normal size.—J. A. GRIFFITHS.

BOOK REVIEWS

SPREHN, C. E. W. (1957). Helminthen und Helminthiasen des Schweines. **[Helminths and helminth infestations of pigs.]** pp. vi+174. Jena: Gustav Fischer Verlag. DM 12.30. **958**

Laid out much like familiar text-books of veterinary parasitology for students, this work is devoted chiefly to a systematically arranged account of the morphology of those helminths which have been reported as occurring in the pig. Although a key is provided in another section the value of the book as an aid to diagnosis is limited by the lack of uniformity in the style of the illustrations which are drawn from numerous sources. Further sections deal rather inadequately with helminth diseases in the pig and with their control. That there is an intimate connexion between the methods of pig keeping employed and the helminthiases liable to occur appears to have been overlooked. The control

measures advocated are based on vigilance, medication and disinfection.—J. F. MICHEL.

SMITH, H. A. [Head, Department of Veterinary Pathology, School of Veterinary Medicine, A & M College of Texas.] & JONES, T. C. [Lt. Col. U.S. Army Veterinary Corps.] (1957). **Veterinary pathology.** pp. 959. London: Henry Kimpton. 130s. **959**

This text-book is designed primarily for the veterinary student but the authors hope that it will be a source of reference for the practitioner and also useful to workers in comparative pathology. As used in the title the word "pathology", which can mean different things to different people, means morbid anatomy and histology rather than disease.

The introduction deals with the death of cells and tissues and is followed by chapters on cellular degeneration, mineral deposits and pigments. Disturbances of growth and of the circulation lead on to inflammation and the general reaction of the body to noxious stimuli. There is a chapter on neoplasia with a useful table of the distribution and types of neoplasm in domestic animals. Then follows a very general chapter on the causes and nature of disease which presents in a simplified form the principles underlying infection and the causes of disease. The authors then deal systematically with the infective and parasitic diseases. There is a good chapter on the effects of ionizing radiations followed by an extensive one on poisoning and one on diseases and disorders of metabolism. Then follow eleven chapters on diseases as they occur in the different body systems.

In most cases the description of a disease, after an introductory section, starts with the microscopic pathology and this leads on to the morbid anatomy. A major omission in many instances is the lack of any detailed account of the pathogenesis. The causes and symptomatology are discussed but little is said of the development of the disease. The emphasis is placed on the end result rather than on disease processes. The fact that the changes which occur in any disease vary is not sufficiently emphasized. One or two chapters do not maintain the same good standard: thus in the one on the respiratory system much space is devoted to the classical description of the four stages of lobar pneumonia despite the statement in the text "Most pneumonias in animals are lobular". It was to be hoped that in a new text-book of veterinary pathology this detailed account of lobar pneumonia would not be repeated. Considerable attention is given to jaagsiekte, "maedi" and Marsh's ovine pneumonia but the common and important pneumonias of the calf and pig are scarcely mentioned. In diseases of the digestive system a notable omission is any account of calf scours, and yet elsewhere there is a detailed account of an epidemic diarrhoeal disease of mice. There are a number of these anomalies in the book and a fairly extensive list could be made of the more common diseases omitted and the less common ones included. Thus nasal granulomatosis, due to *Schistosoma nasalis*, a common and important condition in India and Ceylon is omitted from the section on "Schistosomiasis" and from that on "Nasal granuloma of cattle". The important fact that louping-ill is tick transmitted receives no mention. There are a number of errors when dealing with the geographical distribution of diseases: thus it is stated that contagious bovine pleuropneumonia is "at present distributed over much of the world with the exception of the western hemisphere"; in fact the disease to-day is found only in certain parts of Spain, in Assam, parts of Northern Australia and parts of Africa. That camels are hosts of *Trypanosoma evansi* is not mentioned, and *T. equinum* is missed from a table of the important trypanosomes of man and animals. There is no mention of infection of sheep with *Globidium gilruthi* in the section on "Globidiosis." *Dirofilaria repens* is omitted from the chapter on "Dirofilariasis".

More information on species differences would have been valuable since different species sometimes react in different ways to the same pathogenic agent. For example there should have been some mention of Johne's disease in the sheep and of tuberculosis in the different animals—the comparative aspects of tuberculosis are discussed very briefly in a few lines.

The descriptions of microscopic and macroscopical lesions are generally good but in some cases the style is rather lurid. An example of this style (p.878) is:— *"Meantime, even while the hapless cell is dying, arrangements are already being made for disposal of its remains. Little black cells, which apparently may be either oligodendroglial or microglial, gather about the dying neuron, as a magpie sits upon the back of a moribund horse in order to be present at the moment the animal's flesh becomes available to him. While vulture cells might be a better name, these clustering cells are politely called satellite cells and the process is called satellitosis."* A good feature of each chapter is the bibliography. These selected references are in many cases recent and include a

number of review articles, but some are very old, *e.g.* the only two references to contagious bovine pleuropneumonia date back to 1929 and 1935. Some important diseases are not referred to in the bibliography, *e.g.* rinderpest. Frequently the British, European and Australian literature has not received adequate attention. The references are 'tied in' to the text and well arranged and the titles of the papers are given in full. There is a good system of cross references and the index is well arranged. There are over six hundred illustrations, including a colour plate, which are the most valuable part of the book. The photographs are of excellent quality and are about equally divided between photomicrographs and photographs of the gross specimen.

The book is printed in good clear type, on excellent semi-gloss paper and the binding is good. The price is high but this is probably unavoidable in view of the large number of illustrations.

There are a number of typographical errors which should be corrected in later editions. Some examples are "Winston's" disease for Winton disease, p. 767; "starry" coat for staring coat, p. 310; "hypoglycemia" for hypocalcaemia in the definition of milk fever, p.623; "Revue" for Review, p. 73; "Tetse" for Tsetse, p. 443.

As a text-book of veterinary morbid anatomy and histology this book can be recommended to teachers and to students.

—A. R. JENNINGS.

HAGAN, W. A. [Professor of Bacteriology, New York State Veterinary College.] & BRUNER, D. W. [Professor of Bacteriology, New York State Veterinary College.] (1957). **The infectious diseases of domestic animals. With special reference to etiology, diagnosis, and biological therapy.** pp. xx + 968. London: Baillière, Tindall & Cox. 3rd Edit. 84s. **960**

The third edition of this well-known text-book on the infectious diseases of animals maintains the high standards of the previous editions, and the authors' intention of providing the reader with a text-book rather than an encyclopaedia of animal diseases has been fulfilled. The text has been completely revised and a new section on infectious diseases of unknown aetiology has been added without increasing very greatly the size of the book. The presentation and format has not been altered, but there are a few additional illustrations.

The great difficulty in producing text-books of this nature is to ensure that they will be up-to-date when they are published, particularly when an attempt is made to cover such a wide field as is included in the present volume. Thus more might with advantage have been included in the section dealing with chemotherapy, particularly the question of resistance to antibiotics. There are also some deficiencies in the section dealing with virus diseases, for example virus pneumonia in pigs. Similarly oedema disease of pigs can hardly be said to belong to those diseases classified as of unknown aetiology. However, such omissions are probably inevitable owing to the long delay that must elapse between the preparation of the manuscript and the date of publication, and in any case, they do not detract from the excellence of this work. This is a book which all those who practice veterinary medicine will find of the greatest value.—J. A. NICHOLSON.

TAVERNIER, H. (1957). Pratique vétérinaire. **[Veterinary practice.]** pp. xv + 278. Paris: Vigot Frères. **961**

This book is based on notes written down by the author as soon as possible after visiting cases which presented unusual or interesting features. As a result the book is not just another text-book on veterinary medicine, but contains information and shrewd observations which are not to be found in stereotyped text-books. Moreover all aspects of a practitioner's activities are dealt with, so that in addition to surgical and medical cases, reference is also made to meat inspection, law cases of interest, preventive medicine and veterinary education.

The method adopted for presentation of the text has been to consider the more important diseases of the various organs and systems with special reference to diagnosis and treatment under separate headings; cattle and horses being mainly considered. Some specific diseases of small animals (under which term are included dogs, cats, rabbits, sheep, pigs, and poultry) are then dealt with. No attempt is made to give a comprehensive account of the condition discussed, but rather to emphasize the unusual findings and occurrences which are to be met with from time to time when dealing with such cases. Whilst some of the methods and procedures advocated by the author may appear outmoded—as, for example the method of castration—nevertheless he defends their use vigorously both from the point of view of results and also the wishes of his clients. The author has been led to the conclusions he reaches as a result of long experience in practice, and it is these observations and experiences

which are recorded in this book. It is a book, therefore, which is intended for the practitioner and the young graduate about to enter practice; it can be highly recommended to all practitioners of whatever age.—J. A. NICHOLSON.

GARNER, R. J. [Principal Scientific Officer, Agricultural Research Council, Compton, Berks.] (1957). **Veterinary toxicology. Formerly Lander's veterinary toxicology.** pp. 415. London: Baillière, Tindall & Cox. 35s. **962**

With the appearance of this completely rewritten work, a serious gap on the veterinary surgeon's bookshelf has now been filled. Since the publication of the last edition of the old work, toxicology in the veterinary field has changed enormously, from a rather static condition mainly embodying the effects of drugs and plant material, to the rapidly developing field of newer synthetic parasiticides.

Dr. Garner is to be congratulated on the way he has succeeded in squeezing a quart into a pint pot. The specialist toxicologist may consider that some sections treat the subject matter in a rather superficial manner. However a careful and comprehensive bibliography has been provided.

The book is divided into eight sections. These deal with the material under the headings of a general introduction to toxicology, mineral or organic substances, organic compounds (considered as drugs, parasiticides, or miscellaneous substances), poisonous plants, radioactive materials, and toxicological analysis. In general the different groups of toxic substances are wisely arranged. The final chapter deals with toxicological analysis — a subject deserving a comprehensive book in its own right.

—D. S. PAPWORTH.

PANTELOURIS, E. M. (1957). **A handbook of animal physiology.** pp. viii+255. London: Baillière, Tindall & Cox. 25s. **963**

This book is intended to serve as an introduction to the study of general physiology (using the term in its widest sense). The student of physiology is faced with text-books which continually increase in size and as their digestion has become a formidable task, an introductory course which can be followed by specialization is highly desirable. This book is undoubtedly suitable for such an introductory course, but how it is to be fitted into the already overloaded curriculum is another question.

There are five sections, which deal respectively with response and response mechanisms; nutrition and oxygen exchange; energy-yielding processes; internal environment and its regulation; and reproductive functions. A clear enough picture is given of the fundamentals of physiology, but at times the reader is plunged into the intricacies of physiological phenomena with the assumption of a knowledge which the average student beginning his course is unlikely to possess. This applies particularly to nerve and muscle reactions and the release of the energy. The text is concise and ambiguities are resolved as far as is possible. The book can be recommended, not only to the student beginning his physiology course, but to all those who wish to refresh their memories of the broader aspects of general physiology.

—J. A. NICHOLSON.

JONES, I. CHESTER. (1957). **The adrenal cortex.** pp. x+316. Cambridge: University Press. 37s. 6d. **964**

It is refreshing to find a work devoted to the adrenal cortex that presents a reasonably comprehensive account of the workings of this gland in the various vertebrates. The first chapter on the adrenal cortex in mammals, including man, is the longest as might be expected. The author has treated nearly every aspect of the subject including structure, functions, relationship to other parts of the body, nature and method of formation of products, control of secretions, and the effect of abnormalities. In the subsequent chapters he goes on to outline the adrenal in fish, amphibians, reptiles, birds, monotremes and marsupials. Finally, the embryological development and evolution of the cortex, together with a theory on the structure and functions of the adrenal glands are presented. The text is adequately supplemented with plates and diagrams, and a comprehensive bibliography covers the published literature up to the spring of 1955. This book will be of interest to endocrinologists in the veterinary field.—D. S. PAPWORTH.

GLAGOLEV, P. A. & IPPOLITOVA, V. I. (1956). **[Anatomy of farm animals and the principles of histology and embryology.]** pp. 472. Moscow: Gosud. izd. sel'skokhoz. literaturui. **14r. 60k.** [In Russian.] **965**

This is a new text-book for students at zootechnical institutes and faculties. It combines the elements of histology and embryology with the comparative anatomy of the domesticated mammals and birds. The 300 illustrations are mostly drawings, some original and some borrowed from other works. There are also 8 coloured plates, including one (figure 42) which compares the leucocytes of the different species.

The inclusion of Latin synonyms renders the book useful as a dictionary for those unfamiliar with Russian anatomical terms.—R.M.

FLORKIN, M. (1956). Aspects biochimiques communs aux êtres vivants. Introduction à la biochimie général des organismes. **[Biochemical properties common to living things. An introduction to general biochemistry.]** pp. xxxi+425. Paris: Masson et Cie. Fr. 3600. **966**

This is a refreshing work to a biochemist wishing to revise the general field of subjects usually included in a first text-book on biochemistry. It suffers somewhat in having set out to do too much and without assuming a defined level of knowledge of chemistry, particularly in the organic field. Despite these objections common to many general works of this type, the material is presented concisely, and excellent use has been made of diagrams both to summarize complex reactions, and to illustrate chemical structure of many substances. The bibliography is very limited and should have been extended to improve the scope of the book.—D. S. PAPWORTH.

SCHÖNBERG, F. & ZIETSCHMANN, O. (1958). Die Ausführung der tierärztlichen Fleischuntersuchung. **[Text-book of meat inspection.]** pp. viii+335. Berlin (& Hamburg): Paul Parey. 5th Edit. DM 41. **967**

This book is the standard work on meat inspection in the German language. The main format of the book is similar to that of previous editions and a feature is the exhaustive description of the lymphatic system, not only of the ox and pig but also of the horse; the illustrations in this chapter could scarcely be bettered. This chapter is followed by detailed instructions as to the examination of carcasses and organs, and the most important diseases and affections which the meat inspector may encounter. The section dealing with the judgment of carcasses affected with tuberculosis has been completely revised in the light of recent research and there is an interesting table detailing the incidence of tubercle bacilli in the flesh of tuberculous cattle; this table shows that bacilli may be demonstrated in the muscular tissue in 7·5% of cases with a primary complex, in 20% of cases of early generalization even though the lesions were inactive, and in 17·5% of cases of isolated organ tuberculosis. Tests for the recognition of imperfect bleeding of carcasses, including the method recommended by Pusch using a glass compressorium are described. A new feature is a description of the problems of anthrax diagnosis in the slaughtered animal, and the lesions described are amplified by excellent photographs.

—H. THORNTON.

LERCHE, M., RIEVEL, H. & GOERTTLER, V. (1957). Lehrbuch der tierärztlichen Lebensmittelüberwachung. **[Text-book of food inspection.]** pp. xvi+1078. Hanover: Verlag M. & H. Schaper. 3rd Edit. DM 148. **968**

This third edition of the well known German publication, by Lerche, Goerttler and Rievel, is carefully compiled under the following chapter headings:— The Definition and Purpose of Food Inspection, The Bacteriology of Food Inspection, The Nutritive value and Composition of Foods, Meat, Meat products, Game, Poultry, Eggs, Fish, Crustaceans and Molluscs.

Though the contents of this book are particularly applicable to Continental practices, there are many features of great interest to any Food Inspecting Authority. For example, on page 127 there is a most useful table of the types of salmonella with their specific hosts and other hosts from which they have been recorded. A considerable section is devoted to sausages and meat dishes: the text and illustrations, many of the latter in colour, deal with the composition of the various types of made-up foods and the histological identification of ingredients of an inadmissible nature. On page 725 are some useful diagrams showing the skeletal differences between the sheep and goat and the cat and hare, while in a section on eggs there is an informative description of the deleterious changes occurring in hen's eggs and the detection of these by candling and other means.

This book cannot be regarded as intended for the student, for it does not deal with such subjects as the various systems of the animal (lymphatic, reproductive, etc.), nor is there a description of the various bacterial and parasitic diseases encountered and how such affections are to be judged by the meat inspector. It is intended rather for the qualified meat inspector and should find a place on the bookshelves of every Food Inspecting Authority. A translation into English omitting much of the section devoted to German legislation would be useful.

—H. THORNTON.

BÖHM, R. & PLEVA, V. (1956). Mikroskopie masa a surovin živočišného původu. **[Microscopy of meat and animal products.]** pp. 174. Prague: State Publishers of Technical Literature. **969**

This work deals with the microscopic structure of meat and meat products and the changes these products undergo during their preparation.

It was written mainly for technicians and laboratory personnel in the food industry, but also for students of veterinary medicine and food technology. There are over 220 line illustrations and photomicrographs, some in colour, and many tables. The book is well indexed and produced. —E.G.

HARRISON, R. G. [Derby Professor of Anatomy, University of Liverpool.] [Edited by.] (1957). **Studies on fertility. Including papers read at the Conference of the Society for the Study of Fertility, London, 1956. Being Vol. VIII of the Proceedings of the Society.** pp. x + 138. Oxford: Blackwell Scientific Publications. 25s. **970**

Of the thirteen papers included, there are five dealing with human infertility. The small laboratory animals are represented by four papers on spermatozoa production (one with the frog, three with the rat), and one concerned with mice of both sexes. The section of more direct veterinary interest comprises a paper each on basic physiology, and exploitation of bull and ram semen, and one on male fertility in the horse, which embodies important additions to knowledge and may be thought the most significant paper by veterinary readers (especially those outside Great Britain). Such a content does not appear to make good the editor's claim that the book reflects the "main trends in current research on fertility," for the major aspects of female bovine and ovine fertility are omitted, although they are at present receiving attention from a number of workers. These aspects include egg transplantation, early foetal death, husbandry factors, and clinical infertility. Every paper in the book is good of its kind, but the basis of selection of many of them might perhaps have been made clearer.—F. L. M. DAWSON.

RICE, V. A. [Professor of Animal Husbandry, University of Massachusetts.], ANDREWS, F. N. [Professor of Animal Husbandry, Purdue University.], WARWICK, E. J. [Animal Husbandry Research Division, United States Department of Agriculture.] & LEGATES, J. E. [Professor of Animal Industry, North Carolina State College.] (1957). **Breeding and improvement of farm animals.** pp. x + 537. New York (Toronto & London): McGraw-Hill Book Company, Inc. 5th Edit. 64s. **971**

A fifth edition of this well-known text-book on animal breeding is to be welcomed for much new knowledge has accumulated largely as a result of the scientific study of genetics. Thus the older idea that for improvement to follow, all that is necessary is to breed the best with the best, must now be modified in the light of new genetical understanding. In addition, the physiological principles involved must be fully and carefully studied and it is further established that the correct interpretation of experimental results largely depends on proper statistical analyses. Thus the subject of animal breeding has become so wide that no single author could deal with it in a comprehensive manner, and the present volume is the work of four authors, each dealing with his own special field.

The first section deals with the physiology of reproduction, first from the purely anatomical and physiological points of view, and then diseases of the reproductive organs which lead to lowered fertility or sterility are considered. Consideration is also given to the management of breeding animals, particularly males, to ensure high conception rates, as well as to the practice and problems of artificial insemination.

The second section is devoted to a consideration of the mechanisms of heredity and variation. The underlying laws of mendelian inheritance are clearly expounded, the distinction between qualitative and quantitative variation being considered in detail. Further, the difficulties which arise from environmental factors masking the results of breed improvement thought to be due to hereditary factors are brought out. There is no doubt that in considering the improvement of farm animals heredity and environment are of about equal importance, the difficulty being to distinguish improvement due to improvement in environmental conditions and that due to heredity. The newer concept of what is now referred to as population genetics receives full consideration. In this the significance of the frequency with which particular desirable genes appear in a population of animals is examined, as well as the effect of genes or combinations of genes on hereditary variability. The third and final section deals with breeding systems and the selection of cattle, sheep and pigs for breeding improved types. This section is of particular interest to all who are concerned with progeny testing. The dangers of breeding to some fashionable though perhaps uneconomic fancy, rather than maintaining a breeding policy which, although momentarily out of fashion, has sound economic principles to support it, are discussed at length.

This book cannot be too highly recommended as a standard work on animal breeding; it is one which will be frequently consulted by all who are concerned in breeding improved livestock.—J. A. NICHOLSON.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey Surrey.

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ABBREVIATIONS OF NAMES OF PUBLICATIONS

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